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MEDICAL EDUCATION

AND RELATED PROBLEMS

IN EUROPE

Commission on Medical Education
April, 1930

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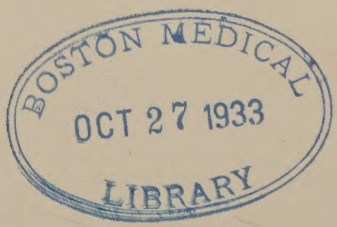

COMMISSION ON MEDICAL EDUCATION

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INTRODUCTION

THE following statement is a summary of the results of a visit by the Director of Study to some of the representative medical centers in Europe. The aim is to present the general characteristics of the training in European countries without endeavoring to deal with the details of instruction in individual schools or to draw comparisons. The places visited were chosen on the advice of those familiar with conditions abroad because they were representative of some of the characteristics of each country.

It is fully appreciated that the methods and organization of medical education in European countries are determined by the educational policies and traditions of the different countries, the character of secondary education, the evolution of medical teaching, the qualifications and methods of selection of the teaching staffs and other factors which have given rather definite national characteristics to this branch of education. Many of the features of training are not transferable directly to American conditions where the development and program of secondary, college and medical education, the tradition of higher education and the general economic and social conditions are different from those in Europe. Many features of our medical training, however, have been modeled from those abroad and the Commission felt that a brief study of the present methods and problems of medical education in European countries would be helpful to those interested in that branch of education in America.

In addition to the study of medical education itself, many documents, data, reports and similar material were collected. Visits to lectures and teaching exercises in laboratories and hospitals and conversations with students, instructors, practitioners and others helped to provide a picture of medical training in the countries visited. The privilege of attending the entire session of the General Medical Council and various examinations of the licensing corporations and universities in Great Britain provided special opportunities to witness the work of those bodies.

The chief purpose of the study was to secure information regarding the general features of medical education and licensure

which would be of value in professional education here. Incidentally, however, it was possible to obtain considerable information on other problems such as premedical education, hospitalization, public health, midwifery, national health insurance and postgraduate medical education, all of which have definite relationships to the basic course.

The medical school, university and hospital authorities and teachers, the government officials, the officers of the General Medical Council, medical associations, licensing corporations and sickness insurance funds and others at the medical centers visited were most cordial and helpful. Their generous assistance made it possible to secure a fairly complete impression of medical conditions in Europe in a short time and the Commission is indebted to them for their valuable help.

GREAT BRITAIN

THE central body in Great Britain dealing with medical education and licensure, known there as registration, is the General Medical Council created by the Medical Act of 1858. Some of the provisions of that Act, which endeavored to secure a uniform standard of medical training by compromise between the apprenticeship training advocated by the licensing corporations and the educational programs of the universities, are due to the historical development and the vested authority of medical organizations in that country.

The practice of surgery was recognized as early as 1163 when the clergy were prohibited from undertaking any "bloody operation" and this type of practice was restricted to the barbers who had long been the assistants to the clerical practitioners. In 1461, the Barber-Surgeons were incorporated. The first charter of the Barber-Surgeons of Edinburgh was granted in 1505, the English Company of Barbers and Surgeons received its first charter in 1553 and the Faculty of Physicians and Surgeons of Glasgow was founded in 1599. The first act regulating the practice of physic was passed in 1422 and provided that no one should use "the mystery of physic" unless he had studied in a university and was at least a bachelor of science. In 1518, the Faculty of Physic in London, now the Royal College of Physicians of London, was founded. The apothecaries began as food vendors and in the time of Henry VIII were the general practitioners of England. They were incorporated in 1606 as a part of the organization of grocers but ten years later separated from that body and obtained their own charter. In 1814, legislation gave them the right to conduct examinations to test skill and ability in the science of medicine and the fitness of a candidate to practice as an apothecary. Regulations regarding the age, length of apprenticeship, moral character and evidence of an adequate medical education were set up at that time. The universities also were interested in medical education from an early date. A lecturer was appointed to King's College, Aberdeen, in 1501 and the professorship of medicine was created at Cambridge in 1540, at Oxford in 1546, at Edinburgh in 1685 and at Glasgow in 1687.

As a result of the activities of the different bodies dealing with

medicine, there were four types of practitioners in the middle of the last century:

1. Physicians who were graduates of a university and members of a college of physicians.
2. Surgeons who were members of a surgical corporation. They were usually not graduates of a university.
3. General practitioners licensed by a corporation.
4. Apothecaries who compounded medicines and administered them to their own patients.

Each group practiced without regard to the others and subject only to the regulations of the body to which they belonged.

Many efforts were made to bring the several groups of practitioners under a single body of regulations. This was finally accomplished by the Medical Act of 1858. The preamble of that Act indicates the general purpose to be served,—"Whereas it is expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners: etc.". The Act established a "General Council of Medical Education and Registration of the United Kingdom" with subsidiary Branch Councils for England, Scotland and Ireland to carry out the general purpose indicated. The Council was charged with the responsibility of establishing and maintaining a Register of all qualified practitioners of medicine and surgery and of determining the conditions under which the several degrees and licenses were to be admitted to the Register. All medical schools and licensing bodies were required to furnish the Council with any information it desired regarding the course of study and examinations leading up to the qualifications granted by each. It was further specified that any member of the General Council or any persons deputed by the Council or its Branch Councils had the right to attend any of the examinations.

The first Register was completed in 1859. Ten years later, the first formal curriculum was recommended and successful completion of courses and examinations in physiology, chemistry, materia medica, medicine, surgery, midwifery, forensic medicine and morbid anatomy became necessary for medical qualification. Additions were made in 1871 (therapeutics, midwifery), 1885 (chemistry, physics, hygiene, mental diseases) and 1887 (dispensary teaching). The whole course was revised in 1893 and made five years in length. Requirements in anaesthesiology and post-mortem work were added in 1906 and medical ethics was added in 1916. In 1922, another complete revision was made.

The original Act specified that the General Council should comprise twenty-three members, seventeen of whom were to be chosen by the universities and licensing corporations then in existence and six were to be nominated by the Crown. The Medical Act of 1886 established the personnel of the General Council as follows: five persons nominated by the Crown with the advice of the Privy Council, three of whom should be nominated for England, one for Scotland and one for Ireland, three persons elected by the registered medical practitioners of England, one elected by the registered medical practitioners of Scotland, one elected by the registered medical practitioners of Ireland and one person chosen by each of the licensing corporations and universities, a total of thirty members. The creation of new universities, the Dentists Act of 1921 and other changes have increased the Council to its present number of forty-one members. Of the forty-one members, three of whom are present when dental business is being considered, only fifteen are necessarily medical men. They are the representatives of the registered practitioners and the licensing corporations. Nearly every member of the Council is a medical man, however, for the Crown and the universities usually make their appointments from the respective medical services and faculties.

Should the General Council feel that "the course of study to be gone through in order to obtain the qualification from any college or body is not sufficient to secure the possession by persons obtaining such qualification of the requisite knowledge and skill for the efficient practice of their profession," the General Council may report the situation and make appropriate recommendations to the Privy Council. The General Council has no power to deny the registration of a qualification; only the Privy Council can take final action. The latter has the authority to order that any qualification granted by a given college or licensing body shall not confer the right to be registered under the Medical Acts. No order of this character has been necessary, however.

The original Act creating the Council was "the Act to regulate the qualifications of practitioners in medicine and surgery." It did not aim to set up a uni-portal entrance to medical practice but was careful to retain education within the province of the universities and licensure within that of the licensing corporations. The general policy of the Council is well voiced in a report of the Royal Commission of 1882: "It would be a mistake to introduce absolute uniformity into medical education. One great merit of

the present system, so far as teaching is concerned, lies in the elasticity which is produced by the variety and number of educational bodies. Being anxious not in any way to diminish the interest which the teaching bodies now take in medical education, or to lessen their responsibility in that respect, we desire to leave them as much initiative as possible. In certain matters of general importance, such as the duration of study and the age at which a student should be permitted to practice, common regulations ought, we think, to be laid down; but we wish to record our opinion that nothing should be done to weaken the individuality of the universities and corporations, or to check emulation between the teaching institutions of the country." Following this policy, the Council has left each degree and license conferring body* free to specify the requirements for its own license, but the Council attempts to satisfy itself that the courses of study and the examinations are "sufficient."

Although the General Council has very little, if any, direct power, it has been enormously influential. Its Education Committee and Examination Committee have presented many resolutions to the Council and these resolutions, if and as adopted by the Council, have been forwarded to the respective licensing bodies and universities and have usually been adopted by them.

The Medical Act of 1886 attempted to strengthen the work of the Council and contemplated that reasonable uniformity should be brought about, not by compulsion but by common action. The most important changes in the Medical Act of that date were the insistence on a complete qualification in Medicine, Surgery and Midwifery for admission to the Register (instead of qualification in only one field) and the introduction of inspection of the final examinations in these subjects instead of visitation only. The clause in the Act dealing with the duty of the inspectors may be quoted: "Inspectors of examinations appointed under this section shall not interfere with the conduct of any examination, but it shall be their duty to report to the General Council their opinion as to the sufficiency or insufficiency of every examination which they attend, and any other matters in relation to such examination which the General Council may require them to report; and the General Council shall forward a copy of every such report to the body or to each of the bodies which held the examination in respect of which the said report was made, and shall also forward

*See Appendix for list.

a copy of such report, together with any observations thereon made by the said body or bodies, to the Privy Council."

Formal inspection is conducted every seven years by three persons distinguished in each of the three subjects of Medicine, Surgery and Midwifery, usually one person from England, one from Scotland and one from Ireland. During this work, the inspectors may not act as examiners for any of the licensing bodies. An inspector is usually accompanied by a member of the Council as an observer, who reports independently to the Council. The reports of the inspectors emphasizing the strong as well as the weak points in the examinations are forwarded to the Examination Committee of the Council with a statement as to whether they are sufficient or insufficient. These reports are discussed in public and when they are particularly favorable they add much credit and prestige to the examining body concerned. Other bodies have the opportunity of learning of the success and commendation of favorable reports and are likely to adopt similar methods. On the other hand, reports of insufficiency and criticisms are likely to stimulate improvement also. There is a general belief that this plan of periodic inspection of examinations, the results of which are made public, has a very beneficial effect.

The Medical Register

The first duty of the Council, as mentioned above, is to establish and keep a Register. Every year the registrars of the Branch Councils revise their Registers and keep them up-to-date, for absence of a physician's name from the Register may create difficulties for him, particularly in matters of certification. Although there is no protection or prohibition of medical practice in Great Britain, there has been a great increase in the number of documents which may be signed only by individuals who are on the Medical Register.

Practitioners may have their names erased from the Register for various reasons. All the corporations and several of the universities have the right to strike off their lists any unworthy member by recalling his membership or degree. Any corporation or university that takes such action must notify the General Medical Council and the latter is obliged to erase that name, unless the individual also holds a university degree which cannot be recalled, in which instance the practitioner's name is not erased. Expulsion from membership in one of the corporations does not

affect registration of his university qualification. Should all his qualifications be recalled, however, his name would be erased.

Erasure from the Register may be ordered by disciplinary action of the Council. If any registered practitioner has been convicted of a crime, the Council takes into consideration the gravity of the offense and may, if it sees fit, direct the registrar to erase the name from the Register. The accused person is entitled to appear and be represented by counsel. Each case is considered on its merits and the decision rests entirely with the General Council. There is no appeal from its action.

Improper professional conduct is the most common reason for disciplinary action. The Council may, after due inquiry, judge a practitioner to have been "guilty of infamous conduct in a professional respect" and may order the registrar to erase the name of the practitioner from the Register. The Council sits only as a judicial body and action against a practitioner must always be started by some individual or outside organization. The practitioner is brought before the Council only to answer an accusation. A visit at these deliberations of the Council convinces one of the fairness and firmness with which the hearings are conducted. The Council, if it judges an individual to be "guilty of infamous conduct in a professional respect," has only one sentence,—erasure from the Register. It is not necessary, however, that erasure from the Register be made immediately for the discretion of the Council holds. The Council may and usually does defer the sentence for six months or a year, at the end of which time the practitioner must produce evidence that he has amended his conduct. If at the end of the period of probation the Council is satisfied with the evidence of good conduct, the name is not erased.

An interesting phase of medical practice which came before the Council frequently for disciplinary action in the past was that known as "covering," a device by which a practitioner was able to increase his practice through the employment of unqualified persons who worked under his supervision. Partly through the activity of the Council "covering" has practically disappeared.

Advertising and canvassing with the idea of increasing practice represents one of the most common complaints brought before the Council under the designation of "improper professional conduct." Most of these are borderline situations and in the majority of instances where the Council is convinced of the guilt of the individual, it has been very reasonable in granting probation rather

than ordering erasure from the Register. Experience has proven this to be a wise procedure.

Another important activity of the Council is the issue of a "Warning Notice." This is not a statement of the law or a warning to the profession as to what the Council may do, but it summarizes the Resolutions and Decisions of the Council upon forms of professional misconduct that have from time to time been brought before it in the exercise of its disciplinary jurisdiction over members of the medical profession and is intended to keep the individual practitioners from getting into difficulties. The first part of the Warning Notice gives fifteen different kinds of documents which can be signed only by a registered practitioner. The second part deals with the relationships of registered physicians to unqualified assistants and to "covering"; the third, with the responsibility of the physician in regard to the sale of poisons; the fourth, with regulations covering the use of dangerous drugs; and the fifth, with the relationships of registered physicians and unqualified practitioners (not the same as unqualified assistants), with advertising, canvassing and association with uncertified midwives. Other matters may also be the subject of discipline by the Council.

In addition to erasure from the Register by virtue of complaints made and proven against a practitioner or for penal reasons, any registered medical practitioner may apply to have his own name removed from the Register providing there is no disciplinary action pending against him.

It is the duty of the registrars to erase from the Register the names of all persons who have died. It is lawful for the registrar to erase the name of any person on the Register who does not respond within six months to a letter from the registrar inquiring whether he is still in practice and asking for his present address. Several hundred names are erased each year under this section (Section XIV) of the Medical Act.

Erasure of a name from the Medical Register is not necessarily permanent. If the General Council is satisfied that a person whose name has been erased from the Register is entitled to have his qualification placed again upon the Register, the Council may do so after due inquiry.

The regulations regarding foreign students and physicians* and similar matters need not be dealt with here. The Council main-

* See Appendix.

tains a Student's Register which is not compulsory. At the present time 79% of medical students are on it. Registration is important for those students who desire to change from one medical school to another. Migration of students is not common, however, owing in part to differences in the curricula of different schools.

There are twenty-three licensing bodies* whose degrees and licenses qualify their holders to be registered under the various medical acts. Five are licensing corporations and eighteen are universities. The former are examining bodies only* and provide no instruction. There are thirty-three medical schools,* several of which are recognized by the licensing corporations only. The latter are known as extra-mural schools* and present an interesting situation inasmuch as completion of their courses does not provide a registerable qualification but only the privilege of taking the examinations of the licensing corporations. Many of the courses are given full credit by the universities. The students can, therefore, take courses in the extra-mural schools and can choose their own teachers, which has had a very stimulating effect on the university teachers at schools like Edinburgh. The extra-mural schools in Edinburgh and Glasgow have served as a training ground for university chairs there and elsewhere in the country. The number of students who took courses in the School of Medicine of the Royal Colleges of Edinburgh during the winter session of 1927-28 was 381 (in 49 courses). During the summer session it was 278 (in 46 courses), of which 165 were medical students at the University of Edinburgh. There are twelve different hospital medical schools under the University of London, which serves essentially as the central examining body for the entire group.

The most important committees of the General Medical Council from the standpoint of medical education are the Education Committee and the Examination Committee. The first named consists of twelve members made up of representatives of the Branch Councils of England, Scotland and Ireland. It reviews all matters dealing with education, makes recommendations to the General Council on educational matters and superintends all details of the Medical Register. The Examination Committee, which is made up in the same general way, considers and reports on matters dealing with professional examinations, except those for diplomas in

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* See Appendix.

sanitary science, public health, state medicine and dentistry. It is also responsible for the inspection of examinations in the three major clinical subjects and for the visitation to all examinations.

THE PLAN OF MEDICAL EDUCATION

The general plan of medical training in Great Britain at present is based on a group of resolutions adopted in 1922. The Council requires that a student before beginning his medical study must have attained the age of seventeen years and have passed an examination or examinations conducted or approved by one of the licensing bodies in elementary physics and chemistry, both theoretical and practical. This is in addition to his passing an approved examination in general education which must cover English, elementary mathematics, a language other than English and one other subject such as history, geography, physical science, natural science, higher mathematics or another foreign language. Neither physics nor chemistry may be presented as one of the four required subjects in general education. The General Council recommends that the period of professional study for any diploma which entitles its holder to be registered should be a period of study of not less than five academic years, in the last three of which clinical subjects shall be studied.

The Council issues a list of examining bodies whose examinations in general education are recognized. There are twelve university examinations recognized without qualification and thirty other examinations in general education which are recognized if they cover the four groups of subjects in general education and the two specific sciences which are necessary for matriculation in medicine. Students are not required to have any knowledge of German or French. The students who take degrees in arts or science usually secure some knowledge of one or both of these languages.

All students who desire to study medicine and who satisfy the minimum requirements are permitted to do so. There is not an excess number of applicants from which the most promising students can be selected although a few schools do pick their students carefully. Those rejected can get into another school without difficulty. Owing to the inability of the American medical schools to accommodate the great number of students who wish to study medicine, a considerable group of those who have not

been accepted have been applying for admission to British schools, particularly to those in Scotland. Last year more than six hundred American students applied for admission to Edinburgh alone. Practically all of them were or would have been unable to get into an American school. Very few were accepted by Edinburgh. Special regulations regarding the applications from American students for admission to British Schools have now been made.

Differences in Premedical Training

The great variety of secondary schools and the absence of a uniform requirement for admission to medical study account for the considerable unevenness in the preparation of students in different sections of the country and in different schools at the time they begin their professional studies, although there are strong factors operating now to secure uniformity. The methods of teaching in the upper forms of the secondary schools tend particularly to place responsibility on the abler students for their own education and to develop a high degree of self reliance in that small group. Poor and indifferent students are carried along, however, by tutoring and drilling and many of them complete the examinations. The student body on leaving the English public schools is not as homogeneous as that on the Continent. A majority of the Scottish students enter the universities with the credit of the leaving certificate of the Scottish Education Department, which is a combined certificate of education and examination.

Several of the licensing corporations have requirements and examinations somewhat below the standard of the universities. The Examining Board in England recognizes the preparation and examinations of some students who cannot satisfy the requirements for admission to a university medical school. Because of this situation, students may study in the medical schools under the University of London, for illustration, without having satisfied the entrance requirements of that university. While they are not eligible to graduate from the university, they may obtain the M.R.C.S. Eng., L.R.C.P. Lond. by passing the examinations of the Conjoint Board. These qualifications are registerable and admit the successful candidate to all the privileges of the university graduate so far as practice is concerned.

An increasing number of students now enter the universities on the basis of a preparation required for the higher school certificate

which ordinarily represents two years of additional work in the secondary schools. At the University of Manchester, for example, 25% of the students are admitted on that basis. This tendency operates to increase further the differences in the preparation of students.

Some of the universities require more preparation than that prescribed by the Council. Oxford requires every medical student to obtain the B.A. degree, which can usually be acquired in one extra year. About 30% of the students there take more work than that. Cambridge requires every medical student to "have kept or have been allowed" nine terms (three years) before proceeding to the clinical courses.* In the other schools, ten to twenty per cent of the students secure a degree in arts or science in the process of their medical training. Usually the degree is obtained in the sciences, often for only one year of work in addition to the prescribed medical course. It is emphasized that the chief advantage of the extra work is not the greater knowledge the student acquires but the additional experience and broader outlook which it provides. Problems are probed more deeply and the student learns something of the art of self-education.

Student Body Heterogeneous

As a result of these variations in requirements and preparation, the student body in most of the medical schools is rather heterogeneous. This is particularly true in London where it includes those who have had the extra training at Oxford and Cambridge and are working for the medical degrees of those universities, those enrolled for the University of London medical degree, some of whom have obtained an arts or science degree, and a large number who are eligible only for the examinations of the Conjoint Board. In several of the University of London schools, the Cambridge-Oxford group of students represents about twenty-five per cent of the total and the number of Conjoint Board students is in approximately the same proportion.

Many of the students who are eligible for a university degree also take the examinations of the English Conjoint Board.†

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* The medical schools at Oxford and Cambridge are partial schools. Students usually go to London for their clinical work.

† See Appendix.

Sixty-five per cent of the students working for the M.B., B.S. Lond., for example, take the Conjoint Board examinations. There are several reasons for this. The Conjoint Board will give its final examinations at the end of fifty-seven months of training whereas the universities require a minimum of sixty months. The student is also permitted to take the final examinations in individual subjects at different times, whereas the universities require an examination of all major subjects at one time. The examinations of the English Conjoint Board are generally admitted to be easier and a number of the inferior university students take those examinations who may not be able to pass the university examinations. A number of the students also take the examinations in preparation for the university tests. Another reason is that the student by passing the Conjoint Board examination can get on the Medical Register before he completes his university study and is eligible for a hospital appointment before he graduates. The L.R.C.P. Lond. and M.R.C.S. Eng. are the usual preliminary qualifications presented for the higher degrees of those Royal Colleges and many physicians attempt to obtain these higher degrees later on, particularly as they are now commonly required for hospital staff appointments. These comments apply to the other examining corporations also.

Length of Medical Training

These various factors influence not only the quality of teaching and training in the various schools but the length of the course as well. The average length of the medical course* varied in 1927 from five years and two months at Belfast to seven years and two months at Oxford. The average for all the schools was five years and ten months (not including the one hundred three students who took nine years or longer) as against the minimum requirement of five years. In most of the schools, less than one half the students complete the course in the minimum prescribed time. This is frequently due, of course, to the practice of superior students remaining more than the required time in some field that may interest them and to the increasing number of students who are now obtaining a degree in arts or science while taking the medical course. The length of the curriculum between registra-

* See Appendix.

tion as a student and qualification in 1927 of those students who had registered (79%) was:

4 years, 6 months or less	19
Less than 5 years	282
5-6 years	470
6-7 years	237
8-9 years	68
Over 9 years	103

The time between registration and qualification is not always the actual duration of medical training. It is possible at the University of London, for example, to obtain the M.B., B.S. degree after only three years at a medical school, the non-clinical portion of the course being taken at a school of the University other than the Medical School. That university does not require its students to be registered by the General Medical Council but does require a minimum of five and one-half years of study of the medical subjects before the M.B., B.S. examinations, although the non-clinical subjects need not be taken in a medical school.

The high proportion of failures in examinations is, however, a large factor in lengthening the minimum course of study. The high rate of failures even in the final examinations is due to the policy of permitting all students to study medicine who meet the entrance requirements of the universities or licensing corporations and to continue in attendance after they have shown an inability to keep up with the regular schedule, either because of a lack of industry or a lack of ability. There is no arbitrary limitation of the number of matriculants or the period which a student may remain in the medical school. Course and credit hours are not weighed as heavily as in America but examinations are relied upon to a much greater extent; they are sometimes referred to as a national industry in Great Britain.

Age of Graduation

The age of graduation varies somewhat for the different universities and licensing corporations. At the University of London, the mean age of students passing the last examinations* was between twenty-five and twenty-six years, the average was twenty-six years and eight months. In the Scottish universities the mean age is about twenty-four. At St. Thomas's the average age of

* See Appendix.

fifty students selected at random at the time of the visit there who qualified for the L.R.C.P. Lond., M.R.C.S. Eng., was between twenty-five and twenty-six years.

THE MEDICAL COURSE

British medical schools, with the exceptions of Oxford and Cambridge, began as clinical schools and the training was based on an apprenticeship. In the beginning, the student followed his teacher about the wards (as early as 1662 at St. Bartholomew's), watching him work and later assisting him. He learned medicine by seeing it practiced. In the course of time the masters were loosely combined into faculties and some of these groups obtained nominal university affiliations. There was little distinction to be made between the teaching of those who obtained and those who did not obtain the university connections. The student remained a disciple of his teacher in either instance. As knowledge in the underlying medical sciences grew it became clear that differentiation in instruction was necessary and gradually a more orderly arrangement of instruction was brought about through the organization of hospital schools. Teaching in the medical sciences by practitioners was gradually discontinued and turned over to men who devoted themselves entirely to the various science subjects.

The present day methods are in reality an elaboration of the old apprenticeship instruction. The clinical clerks and dressers of to-day are the direct successors of the apprentices and pupils of the past. The training is designed to give the student knowledge and experience which will be useful later in his clinical work and practice. Very little effort is made in most of the schools to stimulate students in investigative work or to arouse their interest in the unsolved problems of medicine. There is a tendency to simplify the instruction toward its usefulness in practice.

In London, medical teaching is largely in scattered voluntary hospitals, each with its own traditions and vested interests that are clinical rather than scientific in character. Most of these hospital schools made noteworthy contributions and won great prestige during the period of purely clinical observation and treatment. Many of them are adjusting themselves to the new demands growing out of the development of medicine as a scientific and experimental subject. Most of them have not yet been able to secure sufficient funds to provide the facilities and personnel to make the necessary adjustment, although some of them are not entirely willing to

see the control of medical teaching pass out of the hands of the practitioner staff or to see a greater emphasis placed upon the scientific aspects of medical training.

At present, the British scheme of training is of the logical type. The courses are arranged to familiarize the student with the underlying sciences of chemistry, physics and biology and then with the normal structure and function of the human body before the study of abnormal conditions is taken up (in contrast with the "natural" approach of the French). Instruction in the medical sciences is given for two years and is followed by three years of study in the clinical subjects, although some teaching of the sciences is carried into the clinical years. The practical clinical instruction is divided into periods of three months in order that the student may have a reasonably long consecutive experience in one major subject at a time (see "clinical clerking").

The general plan of the course at present is based on the resolutions of the General Medical Council adopted in 1922. These resolutions aimed to strengthen and correlate the teaching of the medical sciences and clinical subjects and to secure more emphasis on the beginnings of disease, all forms of therapeutics and the practice of preventive medicine. The recommended curriculum is given in the Appendix.

In addition to the general outline of the medical curriculum, the Council adopted the following resolutions:

1. Throughout the whole period of study the attention of the student should be directed to the importance of the preventive aspects of medicine.
2. Each licensing body should attempt to secure effective correlation of the different subjects of study.
3. The teaching of Anatomy and Physiology should include demonstration on the living human body of various aspects of structure and function.
4. The curriculum should be so arranged that a minimum period of three years should in every case be available for study after the completion of the examinations in Anatomy and Physiology.
5. The curriculum should be so framed as to afford opportunities for the study of Physics, Chemistry, Biology, Anatomy and Physiology in their practical applications to Medicine, Surgery and Midwifery during the last three years of the course, and further, that the students' knowledge of these applications should be made a part of the final examination in the clinical subjects.

6. Instruction should be given on the duties which devolve upon practitioners in their relation to the state and on the generally recognized rules of medical ethics.

The General Council requires that a student must have passed a recognized examination in elementary physics and chemistry before proceeding to his medical subjects, but the status of these two subjects is not yet settled. The preregistration or premedical requirement of elementary physics and chemistry has not been entirely satisfactory chiefly because the quality of instruction in the secondary schools is much below the university standard and is still quite uneven. As a result, a number of the medical schools still give instruction in these subjects. All give courses in medical chemistry and medical physics during the first year of the medical course as a basis for organic chemistry, biochemistry, physiology, anatomy and pharmacology. At Edinburgh, for example, the course in medical chemistry consists of 100 lectures and forty laboratory exercises of two hours each. The level of instruction and facilities for teaching biology are so generally unsatisfactory in the secondary schools that there is no preregistration requirement in this subject; it is given as a part of the medical course.

CHARACTERISTICS OF THE TEACHING

The deep-rooted traditions of British medicine which are translated into the work of the General Medical Council have given certain characteristics to medical training in Great Britain. A few schools have departed somewhat from the type but certain general features are characteristic for the whole country.

The training is primarily practical in character and the aim of the General Medical Council, the universities and the examining corporations is to produce a safe, competent general practitioner. Factors such as health insurance and the medical needs of the colonies have helped to influence this attitude. Two quotations will illustrate the attitude of the science teachers:—"In teaching students, the primary object of the anatomist is to make anatomy ancillary to the clinical subjects. The teaching should be directed towards the needs of the practice of medicine," and "The teaching of materia medica, pharmacy and pharmacology should be utilitarian."

No effort will be made here to describe in detail the teaching in the individual subjects or to discuss the differences between the methods in different schools. Most of the time of the student in

anatomy is spent in the dissecting room. He is obliged to dissect every part of the body and is left to work out the dissections largely by himself. The chief criticisms of anatomy teaching by authorities in Great Britain is the narrowness of the conception of anatomy, the large amount of dissection and the excessive number of lectures in the subject. An effort is made in some schools, however, to emphasize to the student that the anatomy of the dissecting room, the autopsy, the ward and the normal healthy person is quite different. Particular emphasis is being placed in certain schools upon living anatomy and its relationship to clinical problems by means of:

1. The use of living models for instruction in surface anatomy of muscles, nerves, blood vessels, bones and organs.
2. The study of muscle movements by exercises, gymnastics and the X-ray.
3. The demonstration by means of the X-ray of epiphyses, the movements of joints, thorax, diaphragm, and the alimentary tract and of the injected blood vessels and organs of the cadaver.
4. The inclusion of clinicians on the anatomical teaching staff and, conversely, visits by the anatomist to the clinical wards (in a few places).
5. The use of suitable clinical cases to illustrate anatomical features.
6. Applied anatomy, both medical and surgical.
7. Facilities for clinical students to return to the anatomical department throughout their period of clinical training.

Histology (micro-physiology and micro-biology) is retained in the department of physiology in a number of schools although there is a gradual transfer of this subject to anatomy. The course of physiology at Cambridge, for illustration, includes the histology of blood, connective tissue, nerve, muscle, the digestive and secretory systems, the special sense and reproductive organs and similar microscopic work.

The courses in physiology are particularly well developed in most schools although experimental mammalian work is curtailed by anti-vivisection regulations. Special attention is paid to human physiology,*—nutrition, physiological efficiency, powers of compensation, the effort syndrome, organic and nervous regulations, etc.,—and to applied physiology in relation to clinical problems.

* See Appendix for illustration of experiments.

Other subjects included under physiology in some schools are pharmacology, behavior physiology, biochemistry (usually), biophysics, psychology and comparative physiology.

Abnormalities in circulation, nutrition, muscle tonus, respiration, excretion, the nervous system, the endocrine system and other functions of the body are demonstrated to students by the use of hospital or ambulant patients who illustrate these disturbances. These patients are not presented as clinical problems, but only to show disturbed physiology. The diagnosis of the disease is not given. Similar suitable demonstrations are conducted in the other basic subjects.

Pharmacology includes in most schools not only the physiological action of drugs on normal organisms but the synthesis of new chemical substances and the experimental trial of these drugs on diseased patients (anaesthetics, hypnotics, disinfectants, diuretics, antipyretics, purgatives, metallic compounds, etc.). Therapeutics usually includes vaccines, sera, organotherapy, heliotherapy, physical therapy and psychotherapy. Most of the instruction in these subjects, however, is didactic and demonstrative, not experimental.

The instruction in pharmacology is closely related to the art of treatment in most places. At Edinburgh, the professor of therapeutics is also professor of clinical medicine. Attached to the wards is a therapeutic laboratory with accommodation for ten workers in chemistry and physiology. At Sheffield, the professor of pharmacology gives a course of lectures and experimental work in pharmacology in the third year and the following winter the same professor demonstrates clinical cases in the hospital wards. There the pharmacology and the practical therapeutics are in the hands of one person. At Oxford, every effort is made to bring the practical work into relation with general medical problems. The experiments performed by the student include the action of drugs on the blood vessels, heart, intestine and uterus of a guinea pig, on rabbits' corpuscles and on protozoa, and on blood pressure, diuresis and the intrapleural pressure in the decerebrated cat, as illustrations. Every effort is being made to escape from the old tradition of pharmacology in which the student was expected to memorize the details of a large number of drugs and to substitute a fuller understanding of the character, action and use of a few selected drugs and the wider field of therapeutics.

Pathology in most places is essentially morbid anatomy and has been largely absorbed as a part of clinical medicine to which it is attached in an accessory position. There is little experimental

work being done outside of a few centers. The teaching of pathology is closely related to the clinical instructions throughout the entire hospital training. At Leeds, for example, the instruction in pathology follows lectures in bacteriology and immunology of 60 hours and in general and special pathology of about 100 hours. The practical work is provided by means of clerkships in the post-mortem room. The junior clerkship (three months) is taken concurrently with the preliminary medical clerkship and the senior clerkship is taken at the time of the out-patient medical clerkship of the third year.

THE CORRELATION OF SUBJECTS

Another characteristic of British training is the effort to correlate the various subjects of the curriculum to bring about greater cohesiveness and unity by the process of "infiltration," both downward and upward. By "infiltration" is meant the clinical influence on some features of the teaching in the medical sciences and the carrying of instruction in those sciences into the later clinical years which has a tendency to correlate the various parts of the course and to break down the artificial subdivisions. There is a general opinion that teaching of a subject that is spread over a long period and taken along with other subjects is far more effective in the long run than when concentrated in a brief space of time. Instruction in anatomy and physiology is closely paralleled where simultaneous study of structure and function lends itself to such correlation. In a few schools, instructors in anatomy who are working on problems involving function give part of the instruction in the department of physiology. Investigative work which extends beyond a single field is occasionally participated in jointly by workers in several departments which tends to enliven mutual interests and make for cohesion. Practically all teachers of the medical sciences have had a similar basic training in medicine which is, of course, conducive to a common view-point, although the uniformity in methods and interests has some disadvantages.

The effort is to make the entire course a unit and to develop the medical sciences as a more vital part of the clinical teaching by distributing some of the instruction in those subjects throughout the latter part of the medical course. At Manchester, for example, the first course in anatomy is taken before the student studies zoology and while taking botany. The second course in anatomy is taken simultaneously with zoology and physiology.

Anatomy and physiology are also closely correlated. Some of the anatomy staff do their research work and even some of their teaching in physiology and vice versa. Each department uses part-time clinical teachers. These clinical teachers are used particularly in teaching the anatomy and physiology of the ear, eye, circulation, respiration and central nervous system.

Courses in applied anatomy and physiology are given toward the end of the clinical period of training during which some of the principles of these subjects are correlated with the details of clinical medicine with which the student is then engaged. At Leeds, for example, lectures in applied anatomy are given in the last clinical year twice a week for twelve weeks. Different parts of the body are taken up in sequence and the anatomical relationships of all structures in the region are discussed:—the surface markings, muscles, nerve supply, bony structures, the relationships of organs to neighboring structures, the circulation, common anomalies, etc. All details are left out of such presentations but the student must be familiar with them to understand the generalizations presented. In the twenty-four exercises, every region of the body is covered in this plan of review.

The general plan of teaching in the third year at Edinburgh will illustrate the manner in which correlation is brought about there. The subjects of that year are medicine, surgery, pharmacology, therapeutics, pathology and bacteriology. To a large extent, the ground covered is common to all the subjects. An interdepartmental syllabus has been adopted as a result of which the student receives simultaneous instruction on the same general subjects at the same time. The discussion of ulcer of the stomach, for example, is presented at approximately the same time from the viewpoints of medicine, surgery, pharmacology, therapeutics, pathology and bacteriology. Similarly, diseases of the heart, kidneys, lungs, mouth, liver, endocrine system and other organs and systems are presented simultaneously by the several departments. This plan of concentration upon one topic helps the student to obtain a more comprehensive grasp of each subject.

The courses are divided into three general groups and for each group a lecture hour is scheduled each day, medicine and surgery at 9 A. M., pharmacology and therapeutics at 10 A. M. and pathology and bacteriology at 2 P. M. The several departments coöperate in the selection of subjects to be presented. All these courses extend over the three terms of the academic year. A brief

summary of the syllabus used in this plan of instruction is given in the Appendix.

The course in pathology at Edinburgh, in addition to systematic lectures and laboratory work, the teaching in the post-mortem department of the infirmary and joint demonstrations by pathologists and clinicians, has been extended to include case studies. Each student is required to prepare and submit full reports on six cases. For each case they are provided with a copy of the clinical record, the organs affected by the disease, microscopic slides and other preparations. The student is allowed three weeks to prepare each case. The class meets twice a week for a two hour session during which a student presents a case which is then discussed by the whole class.

The instruction is essentially tutorial in character and the student is free to discuss his problems with the members of the staff. The chief aim is to train students to appreciate not only the end products of disease but to get some grasp of its origin and development and to secure some appreciation of the reaction of the organism as represented by compensation, reorganization and the recovery of tissues that may have taken place and of the ultimate failure of the physiological response. These reports are read by members of the staff and special "clinical readers,"* criticized and returned.

An effort is made in the selection of the cases to give the student a grasp of six major disease groups. The usual grouping is as follows:

	Groups of Diseases	Illustration, Case of
1.	Non-specific infection	Subacute Bacterial Endocarditis
2.	Specific infection	Tuberculosis
3.	Blood disease	Pernicious Anaemia
4.	Malignant tumour	Cancer of Stomach
5.	Liver disease	Acute and Chronic Atrophy
6.	Kidney disease	Interstitial and Parenchymatous Nephritis.

The final examination in pathology is written, oral and practical. The practical aspect is the preparation of a case report.

At University College Hospital, students in the second clinical year have a course in pathology and bacteriology for three months during which time they serve essentially as laboratory clerks and do no work in the wards of the hospital. They have lectures in

* Recent medical graduates who are paid for this work.

pathology and bacteriology four days a week. The mornings are spent in the autopsy room or in doing blood chemistry and clinical microscopy. Half of each afternoon is spent on laboratory work in morbid histology and half in bacteriological methods.

CLINICAL CLERKING

Clinical teaching is based chiefly upon clinical clerking and is, with minor modifications, uniform for the country. Probably the clinical clerkship is the most characteristic feature of British training. Owing to the fact that only a small proportion of students take a hospital appointment after graduation, the clinical clerkship aims to provide every student with an experience and equipment which will make him a safe practitioner at the time of graduation.

Students are assigned for consecutive periods of three months to the various clinical departments where they are expected to become a part of the hospital and out-patient organization for the care of patients. They receive a hospital appointment and have an immediate and responsible relationship to certain patients which are assigned to them. During this period, the student schedule is likely to be roughly this:

10-12 A. M., work in wards or out-patient service
12 Noon, lecture
1:30 P. M., autopsy room
Until 4 P. M., work in wards
After 4 P. M., conferences, occasional special lectures.

The out-patient assignments are usually for the mornings only. During those assignments the student spends the afternoons in one of the laboratories. The clerkships vary somewhat in different schools, but in general the student is assigned for a period of six months to what is designated as the preliminary clinical period during which he studies clinical pathology, autopsy findings, physical examination and history taking. He then is assigned for three months to the out-patient service as a surgical dresser. This is followed by a similar period in the medical out-patient department and by assignments to various hospital services. The arrangement of the nine clinical clerkships of three months each at St. Thomas's will illustrate the general plan:

1. Clerk in surgical out-patient service.
2. Clerk in medical out-patient service.
3. Clerk on the "medical unit."
4. Clerk on one of the medical firms.

5. Surgical ward dresser.
6. Surgical ward dresser.
7. Clerk on obstetrics and gynecology wards.
8. Clerk on pediatrics wards.
9. Clerk in specialties.

At Guy's Hospital, the plan of clinical clerking is somewhat different (each period is three months):

1. Preliminary clinical period, largely medical.
2. Surgical ward clerk.
3. Medical ward clerk.
4. Junior dresser (partly out-patient work).
5. Medical ward clerk.
6. Fevers, anaesthetics, vaccinations and operative surgery.
7. Senior dresser (lives in hospital one week of period).
8. Dresser in obstetrics and gynecology.
9. Clerk in children's department.
10. Clerk or dresser in special departments, all part time assignments for three months each.
    a. Ophthalmology
    b. Otolaryngology
    c. Dermatology
    d. Neurology and mental diseases
    e. Orthopedics
    f. Genito-urinary department
    g. Venereal diseases department
    h. Fracture department
    i. Tuberculosis
    j. Actino-therapeutic department

The appointments in the special departments need not be held in any specific order and several can be held concurrently during the same three months if there is no conflict. During the last three months no appointment need be held if all the specialties can be completed earlier and that period may then be used entirely for revision work and review for the final examinations. When the student is a senior dresser in surgery, he is assigned to one of the full time assistants and takes an active part in the admission of patients on "take-in" days (each firm in rotation has its "take-in" day when for 24 hours all surgical admissions to the hospital are made to that firm). Similar arrangements apply to the medical services.

A selected group of students at Guy's Hospital are permitted to take a three months service on what is known as "clinical." This is a ward set aside originally for the study of patients presenting

difficulties in diagnosis or treatment. Students permitted to go on this service are usually in their last period before graduation or have just passed their qualifying examinations. From these students, five are picked as assistant house surgeons and five as assistant house physicians, and four of each group are promoted later to higher hospital appointments, one for each of the medical and surgical firms in the hospital. The "clinical" services serve admirably for the selection of house appointments.

The Registrar of each service is selected from the assistants. He is a full time teacher on a modest salary and has large responsibility for conducting the teaching and handling many of the teaching-administrative details. He is usually an able clinician, a good teacher and interested in investigative work. He is a key person in the teaching program in which there are only a few full time clinical teachers.

Different schools vary the plan of clerking somewhat. The preliminary clinical period at Leeds, for example, is for six months, during one-half of which the student is assigned to a medical tutor and the balance of the time to a surgical tutor. This period is followed by six months of clinical clerking in medicine and then by six months of surgical clerking, after which the various specialties are covered.

At St. Thomas's the student takes his initial clinical clerkship on the Medical Unit for three months and then transfers at the end of that period for a second clinical clerkship on one of the non-university medical "firms." At University College, students are ordinarily on the University Unit toward the end of their clerkships. At another school, the Cambridge-Oxford students are given preference on the University Unit. In all the English schools, clinical clerking extends throughout the entire year. The student usually has about five beds assigned to him on the hospital firm, and he is expected to do all the things he is able to do for the patients assigned to him in the way of diagnosis, follow-up and treatment.

Owing in part to the very large student body at Edinburgh, classes of the fourth and fifth years are divided into three sections for their practical work. Section A is assigned to midwifery, diseases of children and some of the specialties. Section B is assigned to the department of medicine, including infectious diseases and tuberculosis, and devotes the afternoons to district dispensary practice described elsewhere. Section C spends the mornings in surgery, including anaesthesia, and venereal diseases

and the afternoons are spent in operative surgery and the specialties. Each section devotes itself to the field assigned to it for one term each year. The fixed lectures for the entire class in forensic medicine, midwifery, senior medicine, gynecology, mental diseases and other subjects are given from 9 to 10 in the morning. The balance of the day is devoted to the section work.

Dispensary Teaching

Growing out of the system of clinical clerkships there has been developed at Edinburgh a system of dispensary teaching which offsets to some extent the lack of clerking in the wards due to the large classes. The dispensary program began in Edinburgh with the establishment of the Royal Dispensary in 1776 and a number of similar institutions have been built since then. The city has been subdivided into districts. The patients in each district are attended by a local dispensary. These charitable institutions now provide a complete system of medical attention for the sick poor of that city. Clinical material was utilized almost from the beginning for the teaching of students, but it was not until 1861 that the University Ordinance included a paragraph to the effect that it was a necessary part of the students' curriculum to attend dispensary practice for six months, although students at that time were given the option of attending the practice of a physician or surgeon as an apprentice. In 1864 this regulation was embodied in the Edinburgh University Calendar and the practice of dispensary teaching has continued to the present time.

The advantages of dispensary teaching are particularly that the student becomes familiar with conditions that he is likely to meet in practice. He has opportunity to follow the results of treatment and convalescence and becomes familiar with the great variety of mild disorders and the beginnings of disease, chronic, acute and contagious. At the present time students are required to spend two periods of three months each on dispensary service and must, before graduation, report in full upon forty cases that they have had under their care. The students report two mornings a week at one of the dispensaries and there receive assignments to the patients who have appealed to the dispensary for medical care. The student goes to the home, takes a history, makes a physical examination and returns with any materials he may desire to examine to assist in diagnosis, and then proceeds under supervision to prescribe the treatment. Should the patients be seriously

ill or the student unable to deal with the situation, one of the dispensary physicians, who is usually a member of the faculty of the medical school, goes out with the student.

HOSPITAL ORGANIZATION

Mention has been made of the hospital "firms" and it may be well to discuss briefly that feature of hospital organization. A firm ordinarily consists of a chief and his assistant who are "honorary" physicians to the hospital,—*i.e.* practitioners who have charge of a service,—a salaried, full time registrar whose function is almost entirely teaching, an intern, a junior intern, who usually is assigned to the out-patient service and who has about five beds in the ward, and a group of clinical clerks, six or eight to a firm of about forty beds. Usually the firm does not have any laboratory facilities of its own. That type of work is done by a central laboratory which is available to all the firms. The findings, except the routine examinations made by the house physicians and clinical clerks, are written reports and ordinarily there is very little direct correlation of laboratory and clinical findings. The "clinical units," to be discussed later, aim in part to correct this difficulty.

In the larger hospitals there are a considerable number of firms. Guy's Hospital, for example, which contains 646 beds has 22 different firms: 4 surgical, 4 medical, 3 obstetrical, 3 ophthalmological, 2 nose and throat and 1 each for orthopedics, urology, neurology, psychiatry, pediatrics and skin diseases. At St. Bartholomew's Hospital there are five medical and five surgical firms; one of each has been converted into a "professional unit." In the Royal Infirmary in Edinburgh there are seven surgical and eight medical firms of approximately forty beds each as well as firms in a number of specialties, to all of which medical students are assigned for instruction. The other hospitals are subdivided in a similar manner.

The assignment of six or eight students to each firm as practiced in London allows each student about five or six patients whom he must follow in addition to his assignments of lectures and fixed exercises. In some of the provincial schools, each student has an even larger number of beds. At schools like Edinburgh, however, the student body is so large that students often have only one or two beds available for their clerkship, which is obviously inadequate. The result has been that instruction at such schools is almost entirely by lecture, demonstrations and ward rounds which

must serve as substitutes for ward experience. Furthermore, the clinical period of instruction in Scotland covers only nine months of the year (in England it covers twelve). In the Scottish training there is more dependence upon teaching whereas in the English plan there is a larger element of practical experience with patients in the hospitals.

Clinical Units

As a part of the readjustment of medical training from a purely clinical to an experimental and scientific subject, a number of the medical schools have introduced the "professional" or "clinical units" in the hospitals. In most instances, one of the existing firms was taken over, enlarged and equipped as a real teaching and research organization with a full time salaried staff. The primary aims have been to provide a university standard of education for students in the clinical subjects for a part of their training, to advance clinical knowledge by providing facilities and personnel for research and to train teachers of clinical medicine. The program has been looked upon as a natural development of the British system of clinical teaching, although the essentially clinical tradition of medicine in Great Britain has lent caution and conservatism to the reorganization of even a small part of the hospital.

The plan of the university clinics is simple. At London Hospital, for example, the staff consists of a director, an assistant director, first and second assistants and two house physicians, all full time salaried persons, and a number of research workers, usually full time. At St. Bartholomew's, the staff of the medical professorial unit comprises a director, an assistant director, three chief assistants who devote themselves entirely to research and the work of the department, a variable number of clinical assistants who are not on salary but who assist in teaching and investigative work and two house physicians (interns). The surgical professorial unit at St. Bartholomew's is similar. Those in the other hospitals are essentially like these. The directors of the "clinical units" are professors in the University of London.

The full time "clinical units" represent only a small part of the hospital facilities. The general hospital organization continues to be made up of the consultant and practitioner group with a few young assistants who constitute the various firms. The full time and voluntary types of service exist side by side in the same institutions and coöperate in the teaching as suggested earlier.

The General Medical Council regulations maintain that during at least two terms in the clinical years the student should have a course of systematic instruction and demonstrations in obstetrics, including ante-natal conditions and infant hygiene. He later must have a continuous attendance on obstetrical hospital practice for three months during one of which he must serve as a resident student. It is a general opinion that a more intensive training in obstetrics should be provided so that the student may concentrate his study and live in the atmosphere of a maternity hospital where he could see all phases of obstetrical service from the ante-natal clinic to the care of the new born infant and the after care and follow-up of the mother and child.

Teaching in midwifery presents an interesting difficulty. About 75% of expectant mothers call midwives for their confinement and 60% of the deliveries in England and Wales are attended by midwives. All these confinements are normal, for the midwife is not permitted to deal with abnormal deliveries. The regulations of the General Medical Council require that each student shall attend twenty deliveries, most of which are normal, but much of obstetrical practice by physicians in the community is with abnormal cases, for dealing with which the student has had very little preparation.

The large number of midwifery pupils in the lying-in hospitals seriously hampers the proper training of medical students. Only 22% of trained midwives actually practice.* Many women take the course in order to obtain the certificate of the Central Midwives Board which entitles them to consideration for a number of government and hospital positions for which some certificate is necessary. Inasmuch as more than three-fourths of women who are trained in midwifery never intend to practice, the cases allotted to such women are, in a sense, wasted so far as instructing students of medicine and midwifery in the care of pregnancy, in proper delivery and after care is concerned.

At the last meeting of the General Medical Council, the suggestion was made, but not acted upon, that every medical student should be required to serve a continuous period of three months in residence in a lying-in hospital during which he should be called upon to participate in the care and treatment of the usual

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* See Appendix for data.

run of obstetrical problems. There is a general belief that the number of obstetrical beds in the teaching hospitals should be increased and that the facilities for the instruction of medical students should be enlarged and improved.

The Specialties

Three general principles govern the teaching of the clinical specialties. Special subjects are not taken up until after the fundamental subjects have been covered, only the elements of the specialty are dealt with and each subject is treated as an intrinsic part of general medicine or surgery, not as a separate entity.

Pediatrics as a special field of medicine has developed only recently in Great Britain. Twenty-five years ago, not one of the general hospitals connected with the medical schools in London had a separate children's department, for example. Small units have been organized in some of them but the subject has not been developed very far yet. The General Medical Council has now placed the subject foremost among the subdivisions of internal medicine and there is a growing conviction that it should be given recognition as a major subject, with a clerkship of its own, and that it should be designated as a major subject in the final examination.

There is a growing recognition also of the importance of psychology and psychopathology not only in the treatment of the common functional nervous disorders but as an important factor in the prevention of serious mental disease.

Ophthalmology is another subject of wide application in practice and is not looked upon as a specialty in the narrow sense of the word. In 1919, the General Medical Council resolved "that every student should be required to attend a course of practical instruction in ophthalmology of not less than ten weeks duration" and a certificate of attendance for that period of instruction is required for admission to the final examination.

Forensic medicine was first introduced in Great Britain as a subject of instruction for medical students at Edinburgh in 1791. The chair at Edinburgh now is in two faculties, law and medicine, and the professor holds the appointment of police surgeon to the municipality, which insures an abundance of interesting and valuable material for instruction. The aim of the teaching is to equip the future practitioner to discharge his medicolegal responsibili-

ties. A brief outline of the course of fifty lectures and demonstrations is given in the Appendix to suggest the ground covered. All the medical schools provide instruction in the subject although in a number of the English schools the instructors are not specialists in the subject. The course at Birmingham is very strong and an outline of it is in the Appendix. There is a marked difference between the procedures for the investigation of sudden death in Scotland and England and because of that, the subject receives, on the whole, much more emphasis in the former country.

The preventive aspects of medical practice receive special emphasis and an effort is made to permeate the entire curriculum with the spirit and methods of preventive medicine. It is the aim to make it an integral part of the teaching of all clinical subjects with emphasis upon the causation and prevention of complications, disabilities and sequelae of illness and upon after care and convalescence. A suggested course of study is given in the Appendix. Special efforts are made through the National Health Insurance Service to promote the program of preventive medicine in medical practice.

THE EXAMINATIONS

Probably the most important feature of the educational plan is the examinations which come at every stage of the medical course. They come so frequently and are so important in the promotion of students that they interfere seriously with the training of many of them. Students must spend a great deal of time and energy on preparation for one or another of these tests. The emphasis on subject examinations in the past with consequent subdivision of training into water-tight compartments was responsible in part for the regulations of the General Medical Council mentioned earlier which aim to treat medical education as a comprehensive whole. The art of examination is particularly well developed and there is a large body of skilled examiners in the universities and licensing corporations. The final examinations, as mentioned earlier, are intended to be comprehensive in character and to search out the student's knowledge of all subjects pertaining to medicine, including the medical sciences as well as the clinical subjects.

The examinations of the English Conjoint Board can be described briefly to illustrate the general procedure followed. The plan is similar to that used by the other licensing corporations and the universities.

The examinations in chemistry and physics are conducted by two examiners chosen from the faculties of the London schools. They are both written and practical and last about three hours each.

In anatomy and physiology, four examiners for each subject are named from the London schools and they examine in pairs. The written tests are given on two successive days and the papers are corrected by the two pairs of examiners independently. Only those students who pass this written examination are permitted to take the oral and practical tests which are scheduled for three days later. The oral examination in anatomy is conducted on freshly dissected subjects, museum specimens and bones, supplemented by a quiz on surface markings on a living subject. The practical examination in physiology does not include experiments but is confined to questions on apparatus and methods and the identification of histological specimens. About 24 candidates are examined in a morning and an equal number in the afternoon. At the close of the session, the examiners meet and report their grades. A candidate must pass both subjects at one time.

The examination in the clinical subjects is more elaborate and is conducted in medicine by four pairs of examiners selected from teachers in the London schools. Students are assigned to the examiners in such a way that they are never examined by teachers from their own school. The written and clinical examinations are never given to the same students by the same examiners. There are two sets of written questions answered on successive days, three hours being allowed for each. All the papers of one day are read by one pair of examiners and those of the second day by another pair. The clinical examination is conducted in the Examination Hall to which has been sent a number of patients from the various clinics in the city, possibly fifty in all. The first part of the clinical examination is a "long" case. The candidate is allowed about fifteen minutes to examine and question the patient and then he is quizzed by a pair of examiners. In actual practice, the examiners of a team alternate in their questioning, one examining while the other listens. The second part consists of four or more "short" cases in which the student is shown patients with rather obvious conditions. The clinical test is followed that evening or the next day by an oral quiz in medicine and pathology, including the clinical pathology of urine, sputum and other tests, and a quiz on gross pathology.

A similar plan is followed in surgery, in which there are ten examiners divided into five pairs, and covers written papers, clini-

cal cases, surgical anatomy and surgical pathology. After the written paper the student is examined on "long" and "short" surgical cases in much the same manner as described above for medicine. He is required to study and describe several microscopic slides and is quizzed on bandaging, instruments and surgical anatomy. The following day the same group of students is examined in pathology in the museum of the Royal College of Surgeons. The student is quizzed not only upon the nature of the pathological specimens shown to him but also on diagnosis and treatment of such conditions in patients.

After the examinations are completed, the examiners assemble and pool the grades they have given to the individual students. All the candidates assemble at a specified hour and those who have been successful are notified formally and must sign the by-laws of the colleges represented on the Conjoint Board. A candidate must pass all of the examinations without condition before he receives a license.

The examiners are selected by the two colleges on the Examining Board in England (English Conjoint Board) for periods of about five years. These examiners look upon their function as a duty and privilege and they are paid a moderate fee for their services.

Two special features of the examination system in Great Britain are the external examiners and the visitation and inspection by representatives of the General Medical Council. In all examinations in the medical subjects, an examiner from another medical school is employed and he checks the students independently in the written, the oral and the practical tests. These external examiners usually are appointed for two or three years and may serve several institutions at the same time. The plan not only protects the student and the university but it has the desirable result of keeping teachers in different universities acquainted with the work being done in other places. This is further assisted by the presence of visitors from the General Medical Council who are rather strict in interpreting the resolutions of the Council regarding the details of the procedures. This obviously has the effect of establishing a high level of uniformity in the content and methods of the examinations.

A schedule of the examinations of the Universities of London, Edinburgh, Cambridge, Birmingham and of the Examining Board in England are given in the Appendix and will illustrate the general plan as well as the variations. A distinctive feature of the Scottish requirements is that a student may and usually does take

the examinations in sections. In this way he is able to concentrate his work and complete the examinations in a few subjects each year.

STUDENT RESPONSIBILITY

Large responsibility is placed upon the student for his own training. The faculties and examining bodies do not burden their consciences with the inability of students to pass. They assume very little responsibility for seeing that students do their work and there is a frank distinction made between the able and the indifferent student which everyone accepts. The student is left largely to his own initiative and moves forward as rapidly as he can negotiate the various examinations set for him. These examinations are relentless in weeding out those who have not acquired an adequate knowledge of the subject (about 30% of students in the London schools, for example, complete the medical course on schedule, although the low percentage is not due alone to failures in examinations). Little time is wasted on the inferior or indifferent student who is doing poor work or who is not industrious.

The sifting process naturally leaves behind an increasing residual of less competent and less industrious students. A number of schools are now making efforts to eliminate the chronic students. The high proportion of failures in the examinations* is probably due to the number of inferior and indifferent students who keep repeating them. Some of the schools and licensing corporations are now limiting the number of trials that a student may have. It should be remarked, however, that very few students are unable to complete the medical course if they are sufficiently persistent. No university or examining body is likely to make a failure final.

HETEROGENEITY OF STUDENT BODY

The differences in preparation of the student body entering the study of medicine in Great Britain was commented on earlier. This is accentuated in the medical course by the mixing of students who have gone on to obtain an arts or science degree with those unable to meet even the minimum requirements for university matriculation. The accumulation of students who fail in the

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* See Appendix.

various medical examinations and are repeating courses adds further to the heterogeneity of the student group.

In centers like London, some of the students have had only the minimum preparation and are taking the shortest possible medical training; some are not able to satisfy even the university matriculation requirements; some have been obliged to repeat the examinations several times; and others from the universities of Cambridge, Oxford and London have done additional work in the medical sciences and are working for the arts or science degrees of the several universities. This situation is, of course, a reflection of the considerable degree of flexibility which exists in the British system of training.

The heterogeneity of the student body has not determined the level of instruction as much as claimed by some, for the inferior or indifferent student receives little attention. He is likely to fail in the examinations and be obliged to repeat courses. He ultimately gets through, however, after several repetitions and a few extra years of study.

WOMEN STUDENTS

Women are admitted to the medical schools of Scotland, Ireland and the English schools outside of London on equal terms with men students. Several of the schools in London opened their doors to women students during the war but have now reverted to their previous status of admitting men only. The only co-educational medical school in London at present is University College which admits twelve women a year to the clinical courses. The hospital offers opportunities for postgraduate experience to women in all divisions. The London (Royal Free Hospital) School of Medicine for Women has the largest number of women students (278 in 1927-28). In addition to clinical work at the Royal Free Hospital, the students receive instruction in a number of special hospitals in or near London. The Royal Free Hospital is the only hospital in Great Britain which offers all its postgraduate appointments to women as well as men. Data on the number of women medical students follow:

	England	*Scotland*	*Wales*	*Total*
1923-24	1375	640	35	2020
1924-25	1197	431	32	1660
1925-26	1059	313	30	1402
1926-27	930	274	32	1236
1927-28	862	254	30	1146

INTERNSHIP

The proportion of students who take an internship varies a good deal in different schools. About one-half of the graduates of the London schools, for example, take an internship of six months or longer in hospitals either in London or the provinces and many recent graduates begin practice as assistants to established practitioners. The opportunities for hospital appointments can be illustrated from a few of the teaching hospitals. At Guy's Hospital (646 beds), for example, 16 out-patient officers, 8 house physicians, 8 house surgeons, 20 assistant house surgeons, 9 resident obstetrical assistants and 8 residents in the specialties are appointed annually, some of whom, however, serve only six months. At the London Hospital (839 beds), 86 similar appointments are available. The other teaching hospitals in London and outside have about the same type of appointment. At St. Bartholomew's, there are 20 house physicians and surgeons appointed each year. All the appointments in the special departments there are for six months. In most of the hospitals, the house physicians and surgeons are paid, usually £60 to £80 a year.

STUDENT FEES

Students of medicine pay a number of different fees for the different courses and for the various examinations. A few illustrations will suffice. A student at Manchester pays a matriculation fee of £2, fees of £42 for courses leading up to the first M.B., a composition fee for the medical courses of 110 guineas, hospital fees of about £77 and a fee of £8 8s. for each of the three professional examinations, a total of about £255.

The fees for the University of London examinations are as follows:

Matriculation	2½	Guineas
First M.B.	6	"
Second M.B., Part I	3	"
Part II	9	"
M.B., B.S. examination	12	"

Each hospital school in London makes charges for instruction which are not covered, of course, in the examination fees of the University of London. At Middlesex Hospital, there is an entrance fee of 25 guineas and an annual fee (five years) of £45, making the total cost of the University of London degree at Middlesex Hospital about 280 guineas. The London Hospital fees are 20 guineas for

entrance and an annual charge of 40 guineas, bringing the total cost to about 252 guineas. University College makes a charge of 115 guineas for courses leading up to the Second M.B. and University College Hospital has a composition fee of 112 guineas for the clinical courses, a total of 227 guineas, to which must be added the University of London examination fees of 32½ guineas.

At Glasgow, each university course has its own fees. Tickets which permit attendance at the Western Infirmary and other hospitals must also be purchased. The total of the matriculation, class attendance, hospital attendance and professional examination fees is approximately £250. The total of the fees at Edinburgh, including hospital tickets, is £263.

A student who takes the examinations of the English Conjoint Board must pay the examination fees of that body also. Those fees are:

Premedical Examination	3 Guineas
First Professional Examination ..	10 "
Final Professional,	
Section I	4 "
Section II, Part I	10 "
Part II	10 "
Part III	6 "
Total	43 Guineas

Approximately the same fees are charged by the other licensing corporations.

MEDICAL SCHOOL FINANCES

The income of the medical schools is derived from several sources. In the London schools, the financial statements of the different schools under the University of London are separated. A few illustrations of the sources of income for 1927-28 are given in the Appendix. Guy's Hospital Medical School does not receive a Parliamentary grant and is supported almost entirely by student fees. In the medical schools outside of London, the financial statements of the medical schools are not separated from those of the universities as a whole. At Leeds, for example, the medical school income is derived about equally from the student fees, parliamentary grants and endowments and local grants. The total annual expeditures and cost per student of a few of the schools for 1927-28 are given in the Appendix.

The Board of Education was authorized by the Treasury in 1908 to give grants in aid of education to medical schools in England and Wales. In Scotland and Ireland the aid given for medical education was included in the parliamentary grants for all the activities of the universities concerned. This is now the practice in England and Wales except in the case of London where the various medical schools except Guy's, receive grants specifically for medicine. In the beginning the grants were made under the regulations for technical schools and were computed on the basis of student hours. Later, this method was changed and the grants are now made on a rather elaborate study of each institution, including data on the number of whole time and part time students, the subjects taught, the educational staff, physical equipment, facilities for research and other features.

HIGHER DEGREES

An increasing number of graduates endeavor to obtain advanced degrees. Many hospitals now require some special recognition for staff appointments in addition to the registerable qualification. The higher degrees of the various Royal Colleges carry considerable prestige and open opportunities in practice, teaching institutions, research and government positions. At the present time, probably one-third of recent graduates obtain the higher qualifications, either of a university or a Royal College.

The requirements for the higher degrees of the different universities vary considerably. At Cambridge, the candidate must be a B.M. (Cambridge) of three years' standing, must present a thesis and stand an examination on it. The candidate for the M.Chir. of that institution may appear two years after having passed his third M.B. examination and is given a written, oral and practical examination and is obliged to write an extempore essay on a surgical topic. At the University of London, the period that must elapse between acquiring the M.B. and sitting for the M.D. varies between one and two years, according to the nature of the candidate's work, and in all cases evidence must be afforded of special study of the subject chosen. A candidate may present himself for examination for the M.D., London in any one of the following branches:

1. Medicine
2. Pathology
3. Mental Diseases and Psychology

4. Midwifery and Diseases of Women
5. State Medicine
6. Tropical Medicine.

The written examination covers two papers on the special subject designated, a paper on one of the allied subjects in the list above, an essay on one of two suggested topics connected with the special subject and a clinical or practical test. The requirements for the M.S. are similar but that degree can be secured in only one of four branches:

1. General Surgery
2. Dental Surgery
3. Ophthalmology
4. Laryngology, Otology and Rhinology.

To secure the M.D. of Bristol, the candidate must have possessed the M.B. for two years and must either

1. Pass an examination in general medicine,
2. Pass an examination in state medicine, or
3. Present a dissertation.

A similar requirement is made for the Ch.M. but a candidate must have attended surgical practice in an approved institution. The University of Durham grants not only the M.S. (Master of Surgery) but also a D.Ch. (Doctor of Surgery). Candidates for the latter degree must devote three years to the study of surgery and ancillary subjects subsequent to receiving a registerable qualification, one year of which must be devoted to work in the departments of anatomy, physiology, pathology and bacteriology. Not less than six months of another year must be spent as a resident surgeon in a teaching hospital and the balance of that year in the study of surgery in a recognized medical center. Not less than six months must be spent in surgical study abroad.

In the Scottish schools, the preliminary requirement for the M.D. must be one of the following:

1. One year in the medical wards of a hospital
2. One year in scientific research in a recognized laboratory
3. One year in the Naval or Military Service or
4. Two years in practice.

A thesis on a subject which is not exclusively surgical is required and the candidate is examined in clinical medicine and one or more of its special departments. A corresponding plan is followed for the Ch.M. in the Scottish universities.

The requirements for the higher degrees of a university from which the candidate did not receive his M.B. are different from those for candidates whose original training was taken in that institution. A candidate for the M.D. of Durham who received his M.B. elsewhere, for example, must have been in practice fifteen years and be forty years of age to be eligible for the degree.

The various Royal Colleges have several grades of membership. The Royal College of Physicians of London has three,—Licentiates, Members and Fellows. The License is now issued only through the Conjoint Board,—the Examining Board in England. The Membership is available to those who have obtained the License of the College, to other registered practitioners and to graduates of recognized universities. A large majority who obtain the Membership have received the License of the College. Candidates are examined in pathology and the practice of physic and also in Latin, Greek, French and German (the language examinations are not required but additional credit is given for them). The Fellowship is granted to some of the Members without examination as a recognition for outstanding achievement.

The Royal College of Surgeons of England has two grades,—Members and Fellows. The first is obtained by passing the examinations of the English Conjoint Board. The Fellowship is granted after examination to persons at least 25 years of age who have been engaged in professional studies for six years. There are two examinations, the first in anatomy and physiology, the second in surgery. For the second examination a candidate must be a Member of the College, except in the case of graduates in medicine and surgery of not less than four years' standing from universities recognized by the College, who have attended for one year the surgical practice of a recognized general hospital after obtaining their degree (which must be registerable in Great Britain).

The examinations of the Royal College of Surgeons of England are conducted along much the same plan as the examinations of the Conjoint Board. The clinical examination which was visited may be described briefly. Thirty-six candidates are examined at a time. There are twelve examiners from the twelve hospital schools in London paired into six teams. Two written examinations on two successive days are given. One set of papers goes to one team of examiners, the second set to another team. A third pair of examiners conducts a clinical examination in two parts on the third day. The first part is on a "long case." The candidate is given

fifteen minutes to examine a patient, take a brief history and prepare his opinion. He then is questioned on features of diagnosis, prognosis and treatment for about fifteen minutes. The second part of the clinical examination is for quick diagnosis and questioning on eight or ten of a group of about fifty patients with obvious external lesions (tumors of the neck, lesions of the joints, skin, feet, hands, breast, etc.). The fourth examination the following day is practical and consists of performing an assigned operation on a cadaver, during which the candidate is quizzed as to instruments, incision, structures, technique, choice of methods, after care, prognosis, etc. On the fifth day, the candidate is examined in pathology by still another pair of examiners.

At the completion of this program, the candidate has been examined by ten of the twelve examiners in five independent pairs. On the final day, all the examiners meet and report their ratings for each candidate. The examination is severe as attested by the fact that only nineteen of seventy-two were passed in the examination attended. In another group of one hundred and three candidates, thirty-one passed. The number of failures is about the same in the examination in anatomy and physiology. There are about 18,000 Members of the Royal College of Surgeons of England and 1,850 of them are Fellows (F.R.C.S., Eng.).

The Royal Colleges of Scotland have much the same plan for obtaining the respective Fellowships as that described for the English Colleges. A candidate for the Fellowship of the Royal College of Surgeons of Edinburgh who has passed all the examinations successfully must petition for his Fellowship. The petition must be signed by two Fellows. In addition to the usual manner of securing the Fellowship of the Royal Faculty of Physicians and Surgeons of Glasgow, the Faculty may also elect annually four Fellows without examination provided they "have highly distinguished themselves in medical science or practice," are forty years of age and have been graduated at least 10 years.

In addition to these higher degrees and designations, there are many diplomas given by the licensing bodies in special subjects based on training which they outline,—diplomas in radiology, ophthalmology, tropical medicine, tropical hygiene and others. None of these is recognized officially by the General Medical Council.

A diploma in Sanitary Science, Public Health or State Medicine is recognized and registerable by the General Medical Council under the Medical Act of 1886. It is the only special diploma

which is so recognized. The Council revised its qualifications for the diploma in 1921 and set up the requirements that in addition to the curriculum designed specifically for the subject:

1. The candidate must be medically qualified
2. A period of not less than two years shall elapse between the attainment of a registerable qualification and admission to the final examination for a diploma or degree in sanitary science, public health or state medicine
3. The curriculum for such a degree or diploma shall extend over not less than twelve calendar months
4. The course must include specified training and practical instruction in bacteriology, parasitology, chemistry, physics, meteorology and climatology in relation to public health
5. Every candidate must spend three months on the clinical practice of a recognized hospital for infectious diseases.

HOSPITAL FACILITIES

The present relationship of the teaching hospital to medical education is due to the evolution of medical training mentioned earlier. The medical schools arose out of the hospitals, as far as the clinical departments are concerned. Early in the development of medical education only clinical instruction was contemplated. The hospital authorities owned the medical schools and made the appointments to the faculties of their own medical schools as they did to the staffs of their hospitals. Most of the hospitals which developed medical schools were voluntary charitable hospitals. Very few have come directly under the control of universities. There is considerable reluctance in accepting the idea that a hospital should be made an integral part of the university for purposes of education, although there is general agreement in theory at least that there should be a close coöperation between the wards and laboratories. This has been put into effect in the clinical units, for example.

Opportunities for clinical teaching which are now somewhat restricted in certain schools should be increased by the reorganization of the local governments. The Local Government Act of 1929, which becomes effective early in 1930, in addition to dealing with many matters of local government and rates, provides that the public hospitals shall be brought under a centralized administration. The situation is well illustrated in London. The twenty-eight parishes have each had their own boards called "guardians" which in the past levied the local rates (taxes) and, among other

duties, made provisions for outdoor relief and the care of the sick and infirm. Each of the twenty-eight parishes governed itself independently, thus creating twenty-eight water-tight compartments in the city. The Local Government Act of 1929 abolished the plan and created what for London is the London County Council, which will be the governing body for the whole county. Under it will come the administration of public institutions for the care of the sick.

At present, the distribution of hospital beds in London is as follows:

Voluntary Hospitals (116)	15,040 beds
Poor Law Infirmaries (29)	17,479 "
Metropolitan Asylums Board Hospitals (50)	24,586 "
Mental Hospitals, approximately	20,000 "

The Metropolitan Asylums Board created by the Metropolitan Poor Act of 1867 administers an epileptic colony, a number of children's hospitals and homes, five institutions for mental defectives, sanatoria for tuberculosis, thirteen fever hospitals, a hospital for ophthalmia neonatorum and an ambulance service for infectious diseases.

The number of in-patients admitted to the hospitals of London in 1927 were:

Voluntary Hospitals	212,100
Poor Law Infirmaries	126,858
The Asylums Board Hospitals	123,029

The general hospitals of the twelve medical schools represented 5,267 beds and admitted 85,000 of the 212,100 new hospital patients admitted to the Voluntary Hospitals during 1927. Their out-patient services cared for 748,000 of the 1,691,000 new out-patients and for 3,700,000 of the 8,122,000 out-patient attendances to Voluntary Hospitals in that year. On the basis of the estimated population of London of 7,500,000, about 22.5% of the population is cared for by the out-patient services of the Voluntary Hospitals.

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THE CASUALTY OFFICER

In conducting the out-patient services, the "casualty house physician" or "surgeon" is of particular interest. All new admissions to the out-patient department of St. Bartholomew's, for example, are sent to one of the five junior house physicians if they are medical problems or to one of the five junior house surgeons if

they are surgical in character. Each junior house physician and surgeon is attached to one of the medical or surgical firms of the hospital. These "casualty officers" see the patients and treat all minor complaints or injuries and many of the return patients who come for dressings or after-care. All doubtful cases, severe injuries and usually those sent in by outside physicians are sent through to the out-patient services of the several firms to see the chief or some senior member of the firm. Patients who present conditions of special value for instruction or study are also sent to the out-patient services. Patients discharged from the hospital are sent directly to the out-patient service of the firm on whose ward they were cared for without going through "casualty." The unit record system for house and out-patient services is in use but does not include the Casualty Record. Much the same general plan is followed in the other out-patient services.

Hospital Finances

In conducting the out-patient services, only the "necessitous poor" are admitted for treatment. Different hospitals have somewhat different definitions of the economic status of individuals to be admitted but one example will suffice. At Guy's, the maximum income for the purpose of admission is £4 per week for unmarried persons, £5 for a married man and £6 for a man with a family. Data are secured for each patient before admission.

In the hospital wards, no charges are made for the care of the patient, but every patient is asked to make a contribution at the time of discharge. The average contribution is about £1 per week per patient. The cost of care at Guy's Hospital is £10 4s. per patient for the period of illness. The average stay is 20 days, which makes the daily cost a little over 10s. (about $2.50). The annual income of the Voluntary Hospitals of London for 1927 was as follows:

Source	*Amount*	*Percentage of Income*
1. Voluntary gifts, subscriptions,* donations	£1,255,000	43.3%
2. Receipts from patients, fees, public authorities	1,045,000	36.1
3. Income from investments	598,000	20.6
Total	£2,898,000	100.0%

* Including contributions from labor unions and other organizations of about a penny a week per member.

The cost of out-patient work at Guy's is 79.9d. per patient or about 16d. per visit.

A general outline of the health administration of London and of the Ministry of Health, and the types of voluntary hospitals in London are given in the Appendix to indicate the relationships of the numerous hospital and health agencies.

DENTISTRY, MIDWIFERY, VENEREAL DISEASES

Although there is no prohibition of medical and surgical practice in Great Britain, there are three subdivisions of medical practice in which the principle of definitive practice is applied,—dentistry, midwifery and venereal diseases.

Dentistry

The Dentists' Act of 1878 followed the general plan of the Medical Act of 1858 and established a Dentists' Register. Owing, however, to the great shortage of registered dentists under that Act, the enormous increase in unregistered practitioners, in unregistered dental companies and in dental mechanics and the great need for proper treatment and prevention of disorders of the teeth as a part of the health program, a new Dental Act was passed in 1921 in an endeavor to correct the situation. That Act provided that "no person unless he is registered in the Dentists' Register shall practice or hold himself out ..... as prepared to practice dentistry" and created a board for the control of the education and examination of dentists.

An outline of the curriculum is in the Appendix. It is founded on the same preliminary education and preparation in the sciences as the medical curriculum and the medical sciences must be taken in a recognized medical school. The regulations provide that the dental subjects are to be taught only in a dental hospital. The curriculum makes dentistry a specialty of medicine, not merely a craft, and bases the training on knowledge of anatomy, physiology, pathology, bacteriology, anaesthesia, radiology, etc., and places particular emphasis upon the function of dentistry in preventive medicine.

Midwifery

Acts regulating the practice of midwifery were passed in England in 1902 and in Scotland in 1915 which provided for the establishment of a roll of certified midwives similar to the Medical

Register. Each country has a board which regulates the education and examinations required for the certificate and has the power of removing midwives from the roll for infringement of its rules and regulations governing the practice of midwifery. Only those on the roll of midwives may practice midwifery.

Venereal Diseases

The Venereal Disease Act of 1917 prohibits the advertisement of venereal remedies and makes it illegal for any unqualified person to treat or prescribe for venereal diseases in any area in which a treatment scheme has been put into operation by the local authorities. The treatment schemes are now compulsory and the entire country is provided with them.

GERMANY

MEDICAL education in Germany and the German-speaking countries has been identified with the universities from the founding of those institutions and the close affiliation is responsible for certain characteristics of that branch of education. When the University of Prague was founded in 1348, a medical teacher was included in the original faculty. The charter of the University of Vienna in 1365 also provided for medical instruction, although lectures were not begun until 1384. Heidelberg was founded in 1386 and the medical faculty was created the following year. Until 1482, all teachers of medicine there were obliged to be members of the clergy and the employment of laymen as medical teachers was not legally authorized until 1553. Although Leipzig was founded in 1409 the medical faculty was not mentioned until 1415, at which time seven members were appointed. Rostock was chartered in 1419 with a medical but no theological faculty. Other early universities included medical faculties at the time they were founded, Greifswald (1456), Freiburg (1457), Basel (1460), Tübingen (1477), Marburg (chartered in 1529), Jena (1558), Würzburg (1582), Gratz (1585), Giessen (1607).

The first universities were private corporations, foundations of the sovereign of the land, to which were granted certain privileges including the right to confer degrees and to govern themselves. Following the Reformation, however, the universities came under the direct control of the sovereigns as institutions whose primary purpose was to serve the state. After the seventeenth century, the state developed more and more into a comprehensive paternalism and even the universities lost some of their independence. The principle was generally recognized that all important needs of the community were the affair of the state whether in trade, transportation, sanitation, the care of the poor, the regulation of wages and the prices of food, employment, amusement or education. Thus the universities gradually came to be state institutions* although they were protected by statutes that gave them unrestricted freedom in research and teaching.

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* A few present day universities are wholly or largely municipal institutions, such as Hamburg and Cologne.

Out of this situation developed two of the most distinctive features of the German universities which have continued to the present time;—the competition between independent principalities and kingdoms in the establishment, support and development of institutions of higher learning and the traditional freedom that those institutions have enjoyed in their academic programs. This *Lehrfreiheit,* the freedom of teaching what he believes, has become inseparably identified with the privileges of the university teacher. Associated with it is the freedom of the learner, *Lernfreiheit,* which is in sharp contrast with the rigid, severe, prescribed courses of the several *Höhere Schulen.* The student in the university selects his own instructors and the lectures and courses which he attends. He is at liberty to attend none if he chooses. The function of the University is to provide opportunities for learning and students are free to take advantage of them or not, as they wish. There is no compulsion in the order, choice or duration of the studies to be pursued except for the requirements of the different examinations.

The medical faculty as a part of the university has complete freedom in research and teaching but must comply with the regulations of the state which are intended to insure that the training of physicians is adequate. In the medical course, the student is in theory free to arrange his courses, choose his instructors and attend exercises as he wishes but a minimum course of studies is prescribed legally for admission to the qualifying examinations and the schedule of examinations determines in a general way the order of subjects to be taken.

The general plan of medical education and examination is governed by the *Prüfungsordnung für Ärzte* and the *Studienordnung* which are issued by the Minister of the Interior of the Reich. In this Ministry is a Department of Medicine dealing with various health problems, including the requirements for medical education and licensure. All proposed changes in the medical curriculum or regulations dealing with medical education are submitted to representatives of the nine *Hochschulländer** and to the faculties of the twenty-three medical schools† before the proposals are embodied in the requirements.

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* The nine states of Germany which maintain one or more universities, a list of which may be found in the Appendix.

† See Appendix.

Any student who is admitted to a university in Germany may study medicine.* The plan of education leading up to matriculation in the university may be stated briefly as it has an important bearing on the preparation of students for the study of medicine.

PRIMARY AND SECONDARY EDUCATION

At the age of six years every child enters the *Volksschule* and remains there for four years. These four years, according to the new constitution of the German Reich, are the basis of all subsequent education. At the completion of this four year elementary course the pupil may continue in the *Volksschule* for four more years, at the end of which time he may enter one of the various forms of vocational and commercial schools. As an alternative, he may enter one of the *Höhere Schulen* or the *Mittelschule*. About 85% of the pupils follow the first course and remain in the *Volksschule,* about 9% enter one of the *Höhere Schulen* and prepare for university matriculation and the balance enter the *Mittelschule*. Students who continue in the *Volksschule* may transfer later to an *Aufbauschule* and gain the privilege of entering a university if they pass the required examinations.

Matriculation in the university is obtained ordinarily by graduation from one of the *Höhere Schulen* of which there are four different types, the *Gymnasium,* the *Realgymnasium,* the *Oberrealschule* and the *Deutsche Oberschule*. All provide a nine-year course and have as their purpose the preparation for later university training. The *Gymnasium,* which is the oldest type, aims at a classical training and in it the most important subjects are Latin and Greek. With the rapid development of technical methods, mathematics and the natural sciences, the curriculum of the original *Gymnasium* has been somewhat modified in the *Realgymnasium* and the *Oberrealschule*. The former is a more classical school with Latin but no Greek and with emphasis on modern languages and mathematics. The latter emphasizes particularly the natural sciences without the requirement of either Latin or Greek. The fourth type, the *Deutsche Oberschule,* is a development in the educational plan since the war and promises to grow in importance. It requires only one foreign language, English, during the first five years. It stresses particularly the

* The universities usually have four Faculties—Theology, Law, Medicine and Philosophy.

German language and German history and culture. The latter part of the course requires a second foreign language, either Latin or a modern language.

At the end of the nine year courses provided in these several schools the student must pass an examination known as the *Abitur* which qualifies him for matriculation in a university or professional school. This examination is usually severe and insures a high degree of selection at the university matriculation. Every student of medicine has passed the *Abitur* and they all start from this common point. The small proportion of students in the secondary schools who go through the various *Höhere Schulen* and are able to pass the rigid final examination tends to insure a student body in medicine that is more mature and more disciplined intellectually than is the case in most countries. The content of the preparation is widely different, however, depending upon which of the *Höhere Schulen* the student has attended. The work required for the *Abitur* corresponds rather closely to that of the first two years of college in America. Under ordinary circumstances the student reaches the university at about nineteen years of age.

Secondary education in Germany and on the Continent in general has been a highly selective process and has been regarded seriously by authorities and parents. Success in school and university has been very important in securing social prestige and official standing. Since the war, however, there have been important changes in the primary and secondary schools in Germany tending to remove the differentiations rather clearly defined in the past and to open all schools to the general public. The new German school law has ordered the suspension by 1930 of the special preparatory schools maintained for the well-born and the well-to-do and has consolidated education of all children up to the tenth year. It is claimed by many that the program is lowering the standards of the *Gymnasien* in which most of the medical students have been prepared, with the result that the student body in medicine is less well educated than formerly and many students are entering medicine now for vocational, financial and social opportunities.

THE MEDICAL COURSE

The regulations promulgated by the Minister of the Interior are binding on all the medical schools in Germany,* hence the required lectures and courses are uniform throughout the country.

* See Appendix for curriculum.

It is not possible for a university to depart from the prescribed plan of study but the individual universities have a certain amount of latitude in carrying out the details and in providing electives. Inasmuch as the required courses are uniform a student can move from one university to another without delaying the accumulation of a sufficient number of certificates of attendance to meet the requirements for the examinations. In most of the courses no actual check is kept on attendance in the prescribed courses but the student must sign up and pay for each course prescribed. He attends or not as he wishes. The certification of attendance does not represent actual attendance but signifies the payment of the fees for the courses.

THE MEDICAL EXAMINATIONS

Although any student matriculated in a university may study medicine, he may not take the first medical examination before he has submitted evidence that he has spent at least five semesters in a university and certificates that he has attended the courses and lectures that are prerequisite for that examination.

The regulations require the student of medicine to pass two examinations. The first is known as the *Physicum* which is conducted at every university under the auspices of a local commission of teachers usually made up of the full professors, the *ordinarii*. Candidates are supposed to be examined in groups of not more than four, but in some of the larger centers like Berlin and Munich the groups are sometimes twice that size. The examination lasts about four days, two days being spent on anatomy, gross and microscopic, one on physiology, including physiological chemistry, and one on general chemistry, botany, zoology and physics. The questions are not difficult. Should the student fail to pass in any subject he is allowed two more trials, usually within a year. About 80% of the students pass at the first trial.* Theoretically a student is not allowed more than three failures, but in practice it is very rare for a student not to pass at the third endeavor. Even if he fails on the third attempt, he can make arrangements for further examinations. The tests in anatomy, physiology and chemistry are both theoretical and practical. Those in physics, zoology and botany are theoretical only. The student may take the courses in any order he desires, when and where he

* See Appendix.

chooses. If he has had physics, chemistry or botany before coming to the university he must still sign up for the required courses in the university and take the examinations.

The second examination covers the clinical subjects and pathology and is known as the *Staatsexamen.* The student is not allowed to take the examination until after eleven semesters of attendance in one of the medical schools, six of which must be after passing the *Physicum.* He must present certificates of attendance in the required subjects of medicine, surgery, obstetrics, psychiatry and ophthalmology before he is eligible for the examination. In addition, he must present certificates of attendance to specified clinics of medicine, children's diseases, nose and throat, ear and skin diseases and lectures in pharmacology, legal medicine and vaccination. No examinations in these subjects are given, however. He is not required to present certificates of attendance in pathology and hygiene but must stand an examination in those subjects.

The student ordinarily takes the examination in pathology before that in the clinical subjects. The pathology examination lasts about two days. The student is called upon to demonstrate his ability to make a post-mortem examination, usually doing one part of the body during a regular autopsy and writing a protocol. He must make several microscopic preparations, discuss one or more of them and is subjected to a quiz on the subject of pathology.

The schedule of examinations in the clinical subjects is rather formidable and extends over a period of about eight weeks for each student. The examination in medicine usually takes about a week. The candidate is required on two successive days to examine a patient on the ward, take the history, make the diagnosis and suggest treatment. He writes up each of the two cases and hands in the reports the following day. During the following week, he must visit the patients once a day or more often and write up daily notes on progress, special determinations, treatment, etc. At the end of the week he is given an oral examination and must demonstrate at the bedside his grasp of the problem which the patient presents. This may include extensive questioning regarding therapeutics, special findings and other features for which the patient serves as a text. A second part of the test consists of a written paper on therapeutics, prescription writing and an oral quiz in pharmacology.

A similar plan is followed in the examination in surgery. The student works up cases on the ward, usually one or two, and fol-

lows these patients for a period of about a week, at the end of which time he is examined in a similar way. The second part of the examination consists of an oral quiz on the principles of surgery and an assigned operation on a cadaver. The third part is a practical test in bandaging and minor surgery, and the fourth part is on topographical anatomy. The examination in obstetrics and gynecology follows the same general plan and is clinical as well as theoretical. The examinations in ophthalmology and psychiatry are usually conducted in one or two days in much the same manner as those in the other clinical subjects.

Although the required courses as laid down by the regulations of the Minister of the Interior may not cover every phase of medical training, the students know that in the examinations they may be called upon for many details of laboratory or clinical experience. This knowledge stimulates most of them to do considerably more than the minimum requirements, particularly in the clinical subjects.

Successful completion of the *Staatsexamen* conveys the title of *Praktischer Arzt,* but every student must spend one year in a hospital before he is permitted to practice. This feature of the training will be discussed later.

The clinical examinations extend over a period of months and represent a considerable load on the faculty. There is an almost endless number of candidates presenting themselves for examination. Meanwhile, the professors (who conduct the examinations) must carry on lecturing, investigation, clinic and ward work, write papers, attend conferences and see their private patients. The examinations must accommodate themselves to a certain extent to the convenience of the professors. They are scattered throughout the term and are fitted in as best they can be. They are likely to be hurried, crowded and in some instances rather lax, for judgment against a student under such circumstances is likely to be made only in extreme cases. The student gets the benefit of any doubt about his achievement. The paucity of required practical courses explains in part the extent of cramming and coaching courses, which constitute quite an industry in some of the larger universities. Furthermore, students being examined on patients in the wards have the opportunity to get a good deal of information about the patient assigned to them for the examination.

The detailed specifications of the state regarding these examinations cannot, in the nature of the situation, be enforced completely. Much depends upon the individual examiners. Certain examiners

are known to be lenient and students rather commonly plan to take the last semester before their examinations at schools where such examiners are on the faculty. This is said to be one of the important factors in the migration of students. It is offset by the desire of the better students to pass the examinations in the clinical subjects especially in one of the large universities because by so doing they may have better opportunities for clinical experience after graduation.

The University Calendar

The university year is divided into two semesters. The summer semester extends from the middle of April to the last of July and the winter semester begins about the middle of October and extends to March. The required lectures start about two weeks after the opening of the semesters which means that the courses are concentrated in two periods of not much more than three months each. During those semesters the scheduled courses account for about five hours each day except Saturday, although in practice students attend even the required courses as they choose. The primary reason for the short semesters with concentration of the required lectures is to free as much consecutive time as possible for the faculty in which they may devote their time to research. The long vacations provide opportunity incidentally for the students to take their practical courses and to get some experience in clinical work.

THE PREMEDICAL SCIENCES

The courses in physics, zoology, botany and chemistry are in the philosophical faculty as a rule. The student attends lectures in these subjects during the first two or three semesters when he is also studying the medical sciences. The latter press for time and instruction in the former takes the simplest form possible, almost entirely lectures and demonstrations. Only in chemistry is a practical laboratory course required. In the other subjects, short courses of selected experiments are offered, usually in the semester following the lectures, but very few students take them. All medical students are required to take the courses even though some have already had a more satisfactory course in one of the *Höhere Schulen.* This requirement is usually ignored except for the payment of course fees which are necessary for certification.

The instruction in the preliminary sciences is brief and superficial, and must be supplemented by drill-masters and quiz-compends for the examinations. Dispersion of the basic sciences through the early semesters of the medical course proper and the freedom that the students have in arranging their schedule tend further to nullify the usefulness and serious content of the basic sciences.

The lack of a sound preparation in these sciences seriously handicaps instruction in physiology, pathology and subsequent subjects and most students are immediately at a great disadvantage. To help correct the defect, short elective courses in medical chemistry and medical physics are provided in some of the schools to which students may go in the vacation periods or try to attend during the regular short semesters, possibly by cutting other courses of an already crowded schedule.

THE MEDICAL SCIENCES

Anatomy is begun the first semester. Dissection is carried on only in the winter sessions. Lectures are scheduled for an hour each day of the week and dissection for three hours each afternoon for five days a week during two winter semesters (420 hours of dissection). A laboratory course of one semester in histology is also required and elective courses in neuro-anatomy, modelling, topographic anatomy and allied topics are provided. Usually the electives are well attended.

The lectures are demonstrative in character, the assigned textbook recitation is unknown in any medical subject in Germany. The general course covers the entire field of anatomy, supplemented by charts, models, cross-sections, lantern slides, museum specimens, special dissections, photographs, and in some places by an assistant who dissects under a reflectoscope which throws the dissection on a screen as the professor lectures. The student is largely on his own in the dissecting room and must work out his own problems. In many places there is a shortage of anatomical material, owing in part to the activities of the burial societies which provide a professional funeral for anyone who makes weekly contribution to one of these societies,—thus depriving the medical schools of some of its anatomical material. Furthermore, many of the bodies available for dissection are not entirely satisfactory because they have been autopsied. In the larger schools like Munich and Berlin, more than 1,000 students under the supervision of seven or eight instructors dissect simultaneously, about ten first

year men and twenty second year men to a body. As many as 25 students must study one brain dissection because of the shortage of material. In the larger schools, demonstration is coming to replace actual dissection by the student owing to the inadequate staff and the shortage of suitable anatomical material.

The required teaching in physiology is confined to the lecture (two semesters) and the practical exercise (one semester) and usually includes histology. The former is a comprehensive, systematic and philosophical presentation of the subject accompanied always by demonstrations which have been carefully prepared in advance to illustrate various points under discussion. The exposition is orderly and carefully worked out. It affords a clear, scientific presentation of the subject by a master in the field. When seen at its best it is difficult to see how the exercise itself could be improved.

The practical course, however, is far from satisfactory. Most of the students never get an adequate laboratory experience. Very few of the students have had any laboratory work in the preliminary sciences upon which much of physiological experimentation is based. The laboratory course is almost always conducted by some assistant in a semester subsequent to the lectures and no correlation can be made between it and the theoretical lecture work. The equipment and facilities for teaching students is very meager in practically all schools and often only one or at most a few pieces of apparatus is available for each experiment. The result is that in a given laboratory period, a dozen different experiments are being conducted simultaneously. Owing to the lack of previous training on the part of the student and to the absence of sufficient equipment for whole class exercises, many of the laboratory periods resolve themselves into informal demonstrations by the assistant, not infrequently repetitions of lecture demonstrations of the previous semester. A syllabus for the practical course is available but the directions are so detailed and carefully worked out that the experiments even if done by the student are merely mechanical performances with no element of surprize or variability. Owing to the high cost of animals, very little experimental mammalian work is even attempted. The few experiments that are performed are of the simplest type. In some of the smaller schools, conditions are better and the whole class may work on a single experiment, which permits orderliness in the experimental work.

Students not infrequently take their lecture courses and the laboratory work in physiology in different schools. The latter is

often taken in the smaller schools to which the student may go for his *Physicum,* where it is known that the laboratory course is better and the examination is reputed to be easier. Although the lecture courses are required, not more than 50% of the enrolled students in some of the larger schools attend them.

The teaching in pharmacology is almost entirely by demonstrative lectures. No examination is required in pharmacology but students must present certificates of attendance on the lectures.

Pathology

In pathology, the student is not required to present certificates of attendance on any course of lectures, demonstrations or laboratory work. He gets his knowledge and experience without prescription of any form but must pass an examination in the subject, as mentioned earlier. He may present himself at any time for this test, possibly without having had much preparation for it. Most students, however, attend systematic lectures on the subject or have a brief experience as *famulus* (student volunteer).

The lectures in general and special pathology are given during the sixth and seventh semesters, the former dealing with general problems of disease and the latter with the pathology of individual organs. In these lectures abundant illustrative material is presented,—museum specimens, fresh material, slides, charts, photographs and lantern slides,—all of which may be examined by the students at the end of the lecture. An elective course in microscopic pathology is always provided but usually only a few students take it.

The autopsy is the most important feature of the instruction. The courses mentioned above are designed to prepare the student for this part of the instruction. A course in post-mortem examination is given in which the professor systematically demonstrates and describes the findings and discusses the pathological principles involved. Small groups of students attend autopsies and are given opportunity to do part of the work. Later in the course, cases demonstrated clinically which come to a fatal termination are used as a text by the pathologist, who does a post-mortem in the presence of the class and the clinicians. The autopsy material is abundant and the professor of pathology is in every school the pathologist to the teaching hospital, assuring the highest degree of coördination for teaching. There is very little experimental work being done in pathology, however, except in a few centers.

In addition to the usual courses suggested above, most of the universities provide elective courses in pathological chemistry, experimental pathology, pathology of special organs, bacteriological work, neuropathology and allied fields. The student volunteer, *famulus,* can arrange to participate in the work of the department either during the regular semester or during the vacation and obtain thereby a rich experience with unlimited opportunity to utilize the abundant material.

Hygiene, Legal Medicine, Tropical Diseases

Hygiene, like pathology, is not a required course but an examination is given in it. It is of recent origin as a separate institute in the faculty. The subject covers the usual features of sanitation, water supply, sewage disposal, industrial hygiene, contagious diseases and similar topics. The feature of most institutes is the bacteriological work, including animal studies. The course in bacteriology is ordinarily given in the institute and consists of demonstrative lectures and an optional laboratory course (largely observational in character). There is usually no adequate provision for student work, however. Special courses such as military, school, social and industrial hygiene, immunology and parasitology for advanced students and physicians are common.

Only attendance on courses in legal medicine is required. These courses cover a wide range of medicolegal questions, involving causes of sudden death, coroner's cases, stillborn infants, deaths from abortion, the medical aspects of criminal procedures, etc. The professors of legal medicine serve as expert witnesses and advisers to the courts.

Special institutes such as that for tropical diseases at Hamburg are found at a number of the universities. In the splendidly equipped institute at Hamburg are provided all necessary facilities for the study and treatment of tropical and ship diseases, including well equipped wards, isolation units, laboratories and extensive animal quarters. That institute houses a remarkably fine museum containing samples or models of camps, housing, sanitation, insect protection, mosquito control, clothing and other features of life in the tropics, a complete collection of parasites and organisms of the tropical diseases and a large library, lecture room and other facilities. Institutes for the history of medicine, for medicolegal subjects, for the study of neurology and other special subjects are scattered throughout the country.

The characteristic feature of clinical instruction is the non-systematic demonstrative lecture, first begun in medicine and surgery in the sixth semester and followed by similar lectures in all the clinical branches. The general plan of the lecture is similar everywhere and in different subjects. A patient serves as a text and the professor lectures in an arena to a large audience made up of students at every stage, graduates and staff. At the beginning of each lecture, two or more students who have signed up and paid for the course are called to the arena to serve as *praktikanten*. Their function will be discussed later. The history is read by an assistant and the laboratory findings, X-ray studies, metabolism or other determinations are presented by other assistants. Then the professor points out and may be able to demonstrate to the assembly the physical findings with which he has become familiar just before the lecture. A discussion of the significant findings, differential diagnosis and diagnosis follows. In the clinics for more advanced students, a discussion of prognosis and treatment is also included.

Using the patient presented as a text, the professor launches into a historical, philosophical discussion of the entire topic suggested by the problem presented, including references to literature and various theoretical considerations. The discussion is supplemented by the exhibition of slides, specimens and charts. The general level of the discussion is high, the professor is usually well acquainted with the literature and the work done in each field. The attentive listener sufficiently trained to appreciate the references and facts cited gets a splendid perspective and a considerable degree of orientation in the problem presented when the patients are thoroughly worked up for the purpose of the clinic. The aim of this procedure is to present to the students an object lesson in scientific clinical methods. The professor is a master of his subject and concentrates his energy and thought on the lectures. The amphitheatre clinical demonstration provides an opportunity for him to influence and stimulate a large body of students.

The demonstrative lectures, however, are not supported by other exercises which would insure the maximum benefits from them. The clinics are not well differentiated for various stages of student preparation, except the propaedeutic and introductory clinics. Any student may attend the clinics, usually some from every stage in training and graduates as well are present. Little effort is made

to distinguish elementary from advanced instruction. To correct the situation, elective introductory clinics are provided in many places. Most of the students have had little or no experience in examining patients, taking histories or making laboratory determinations and much of the clinical presentation is quite outside their personal experiences, hence it is theoretical and remote. Even the courses in medicine requiring certificates do not include individual training in physical diagnosis. Those in surgery do not include instruction in bandaging, for example.

The highly theoretical character of the required training in Germany has been mentioned before. Very little of practical experience is prescribed. The technique of laboratory work or physical examination cannot be mastered by looking at patients or listening to a learned exposition. The senses cannot be trained by demonstrative methods but only by direct personal experience. The required German training is distinctly a passive process. It is also discontinuous and fragmentary for the lectures are non-systematic. The students usually never see again the same patients that are demonstrated to them, and seldom make an effort to try out the experiments referred to in the lectures in the sciences.

To offset this glaring defect in the plan, however, certain features should be mentioned. Most important are the final examinations discussed earlier which include enough practical work (at least clinical) to stimulate most students to secure voluntarily some training and experience.

Supplementary Courses

Courses are offered by assistants in physical diagnosis, in the examination of sputum, urine, blood and other body fluids and excretions, in bandaging and minor surgery and in the manipulations of the manikin in obstetrics, as illustrations. Usually the instruction is in groups of about twelve students, sometimes as many as twenty-five. The fees for these optional courses are an important part of the income of the younger members of the staff. The clinical material is abundant and the competition among the instructors is keen enough to produce good teaching for those who take these courses,—most students take some of them. These courses are usually taken by students after, not before, the clinical lectures. They help to correct the inadequacies of lecturing but still do not provide a systematic or thorough experience with clinical problems.

Praktikant

A certificate of attendance to a required lecture course cannot be issued unless the student has served as a *praktikant,* a requirement aimed to offset the wholly theoretical type of teaching provided by the lecture system. Usually two or three students are called to the arena. They are supposed to question and examine the patient, suggest a diagnosis, propose treatment and then be quizzed by the professor. But the student has had very little experience in physical diagnosis and history taking. He must formulate an opinion in great haste before an assembly of 100 to 300 persons and often the patient is a difficult (meaning an interesting) problem. The hopelessness of this as an educational procedure is apparent. The professor usually asks one or two questions and then begins to present the case himself, with the *praktikanten* edging into the background. This is not a substitute for practical instruction.

Famulus

The long vacations provide opportunity for the student to serve as *famulus* or student volunteer in the hospital or out-patient services. About three-fourths of the students obtain their practical experience in non-university clinics throughout the country. During the regular school session, he may serve as a *famulus* but only if he cuts many of the lectures which fill most of the day. Probably most students serve a period as *famulus* but the work done varies a great deal and is uneven and uncertain. It seems clear that only a few receive anything like a sufficient first-hand experience in dealing with clinical problems. Much, of course, depends upon the student and the assistant in the clinic to which the student goes. Since the introduction of the intern requirement, the opportunities of the *famulus* have been somewhat curtailed. The *famulus* suggests the English clinical clerk but only in theory for the latter has a definite place in instruction, a definite relationship to the hospital, the usage applies to every student and the experience covers all the major phases of clinical work.

At no stage in training is the student required to have actual experience in the wards of a hospital. He has possibly had some training in physical diagnosis but only as a member of a group of perhaps ten or twenty to whom physical signs have been demonstrated in one of the optional courses. The clinical visits, somewhat like the ward walks in England, are optional and usually not

attended by the students, partly because the discussion is designed primarily for the assistants and house staff.

The comments apply in general to teaching in surgery, obstetrics and other clinical branches. In most places, the surgical clinics are operative, usually dealing with the common surgical procedures such as amputation, herniotomy, appendectomy, thyroidectomy, etc. But the difficulty lies in the fact that practically none of the students can actually see anything. The value of such exercises is small. In a few schools, the surgical clinics are diagnostic only and of real value. Optional courses in bandaging and in surgery on the cadaver are offered by assistants. No operative courses on animals are provided. In obstetrics, numerous optional practical courses are given by assistants. Some students serve as *famuli* and all must participate in at least four deliveries. The training in obstetrics for most students is not satisfactory.

The other clinical subjects are also presented largely as demonstrative lectures. A great variety and number of electives are provided in every clinical field. Most teaching in therapeutics is by special elective courses. The regular clinical lectures are devoted particularly to diagnosis.

Out-patient Teaching

Each student must present certificates of attendance in all the important out-patient services although he is not required to stand a separate examination in each subject. The final clinical examination may be expected, however, to touch on any feature of the case used for the examination and students are likely to attend the policlinics rather conscientiously because they offer the only regular opportunities during the medical course proper for experience with individual patients. As mentioned earlier, the student is not permitted freedom to examine ward patients individually, except as a *famulus* and then usually in vacation in some non-university hospital. In the policlinic, the student sees new patients, takes histories, makes physical examinations, does the ordinary clinical laboratory work and prepares his opinion, all of which are checked by one of the assistants. This general plan is followed in all the clinics.

Migration of Students

The migration of students in Germany is characteristic. Most of them take their medical training in several, sometimes a half-dozen, different schools. This is possible because of the uniform-

ity in the required medical course and the fact that the essential requirements are specified lectures and certificates of attendance on certain clinics. Moving from one city to another does not halt the collection of the certificates, particularly since the student can take the surgical courses of the sixth, seventh, eighth and ninth semesters at one time in the seventh semester in one city, for example, and the required medical courses of four or five semesters in the eighth semester in another city. It is frequently alleged that the students move from one city to another to secure advantages in instruction in certain subjects which may be particularly well done in certain places. There is very little to substantiate this claim except in the case of a few clinical men whose reputations attract students. The average student usually has no way of learning of the reputation or ability of teachers in the sciences and little opportunity to learn of clinicians. Conversations with professors, students and assistants make it clear that other motives explain the free interchange of students. They move about to see different parts of the country and the large cities, for seasonal sports, for art or climatic reasons, for clinical opportunities and a considerable number to take their laboratory work and last semester before the examinations in a school where the examinations are known to be easy.

Repetition of Courses

Most of the required courses are demonstrative lectures and a student is expected to learn largely by listening and looking on. If he is not satisfied with attending a series of lectures once, he signs up again or just goes to the lectures without that formality. The number of subjects in which he is to be examined and for which he must present certificates of attendance is so large that the attendance on those courses combined with repetition of previous courses and attendance on others in advance fills the student's day, although he may attend only a part of those for which he has signed up. The required lectures occupy about five hours a day but they can be worked off in about four years, leaving the fifth year almost free for repetition of courses and for lectures that are not required, possibly some in non-medical subjects. Furthermore, students may register and pay for several courses at the same hour in different years of the course. All of these factors make the student schedule overcrowded, fragmentary and thoroughly mixed. Thus a student may be signed up for and attend

some of the exercises in each of the following subjects in a single semester (the eighth, for illustration):

Medical Clinic (also lectures of VII, IX, X semesters)
Surgical Clinic (also lectures of VII, X semesters)
Psychiatry (also lectures of IX semester)
Otology (Clinic of X semester)
Dermatology Clinic
Topographic Anatomy
Pathology (also lectures of VI, VII semesters)
Infant Care
Obstetrics (VI, VII, X, XI semesters)
Bacteriology (VI semester)
History of Medicine
Legal Medicine
Hygiene
Pathological Physiology.

Fees

The method of paying for instruction is at the root of some of the difficulties in Germany. Students pay fees for each individual course, the large proportion of which goes to the professor who gives the lectures. A considerable proportion of his income is derived from that source. That fact, while it tends to insure the continuance of a high standard in the lectures because of competition with other lecturers in the same or other institutions, introduces serious obstacles to overcoming the overemphasis on lecturing and to the introduction of more practical courses which of necessity must be given in small sections. Proper instruction cannot be given in large classes but the control of student fees by the *ordinarii* prevents increasing the staff to provide adequate instruction. The present system leaves control of the required teaching program in the hands of the university aristocracy, the *ordinarii*, who receive the financial benefits of the large attendance at the theoretical lectures, and they are not willing to surrender those financial advantages.

The fees paid by students range from 3.5 to 5.0 marks per lecture hour (one hour a week for a semester). Additional fees are paid for the optional courses in the laboratory and clinical subjects. The fees for these vary greatly. The usual cost of training is estimated at 250-300 R.M. per semester for the science subjects and 300-350 R.M. per semester for the clinical subjects. If the *Collegiengelder* of a professor exceeds 6,000 marks a year, the state takes fifty per cent above that figure as a surtax.

The student fees represent a considerable proportion of the income of the professors in the science subjects. The clinical professors, on the other hand, receive a lower proportion of their total income from this source because of fees received in private practice, which are usually greater than the university salaries and student fees combined. One of the chief advantages of a clinical professorship is the large opportunity for lucrative private practice. It is common knowledge that many of the largest incomes from private practice in Germany are made by the university professors and that knowledge is a strong incentive for some of the younger men to remain in university positions.

Student Responsibility

A very characteristic feature of the German medical training is the responsibility placed on students for their own education. The professors do not burden their conscience or time with instruction of individual students. The latter must get their practical instruction on their own responsibility, usually from assistants or in non-university clinics. In the secondary schools, the student must learn his assignments or drop out. In the university he learns as much or as little as he chooses or is able to acquire. The university takes no responsibility for teaching the individual student, its obligation ends with providing opportunity for him to learn. It is interested primarily only in the superior, conscientious, self-reliant student to whom every encouragement and reward is offered without imposing undue burdens on the others. The economic and social pressure of the struggle to make a livelihood and the opportunities which are restricted to university graduates in later life operate as strong factors, however, to stimulate students to serious effort and the universities evidently feel justified in providing opportunities for only those who are eager and able.

Research

Research permeates the whole atmosphere of the medical school, the clinics no less than the laboratory departments. The student is exposed constantly to the attitude of investigation, he is stimulated on every side by references to unsolved problems, by theories advanced to explain phenomena, by references to the literature, by contact with men who are on the borderline of unexplored fields of knowledge,—an environment of ideas which cannot help

but be an important influence on the more seriously minded students. The large weight given to research in the selection and promotion of professors naturally stimulates the ambitious younger men in the faculty to talk, think and do research. Students come in personal contact with these instructors more than they do with the older men and cannot avoid hearing at least about investigative work and the great part which it plays in professional recognition and success.

The medical school professors are university professors in fact as well as in theory. Recognition, promotion and calls to other posts depend largely upon scientific production. In the selection of professors, consideration is given also to the character and importance of positions held by candidates. Practically always a man must spend a period of time and distinguish himself elsewhere than in the university from which he graduated to be eligible for a professorship in his own university. The calling of professors from other universities is influential in curing local inertia and in-breeding.

In the past, many of the professors in the clinical subjects were recruited from those trained in the medical sciences but clinical experience, investigation and teaching now are considered more important and most of the professors in those departments are now being selected from clinical departments. Healthy competition and rivalry exist among the professors, among the ambitious body of assistants and among the different universities which have given to medical training a strong emphasis upon scientific endeavor. The emphasis is so strong, in fact, that it puts quantity of output and priority of claims in some instances above the quality of the work and the soundness of the ideas, which has led to a good deal of superficial and unreliable work. During recent years the financial, political and social rewards incident to a reputation in the clinical departments particularly have led to exploitation, the surrender occasionally of the finer traditions of university medicine and serious interference with fundamental research.

Organization of Faculty

The characteristics of German medical education are due in part to the plan of organization of the German universities. Each of the sciences has its own *Institut,* normally in close proximity to similar institutes in the other sciences. At the head of the *Institut* is the professor who really has two distinct functions, that of

teacher in the university and that of director of the institute. In the former capacity he has the definite responsibility of teaching the students according to the conventional and required courses. But as director of the institute he has full academic freedom with very little in the way of prescribed duties or responsibilities to anyone. He is free to work on any problem and to be as unconventional in his methods and ideas as he wishes.

Although there are differences in size and productive output of the institutes, they all are essentially alike in facilities, equipment and organization. Each is a unit with its own lecture rooms, equipment for demonstrations, preparation rooms, laboratories for students and advanced research workers, library and museum. Each has its own staff and carries out the instruction of students and its research quite independently of the other institutes in the same university. The institutes of the medical sciences are usually in the neighborhood of the clinics and hospitals. The physical proximity allows the students to go between the different laboratories and clinics with small loss of time.

The *Klinik* corresponds closely in conception to the *Institut* of the sciences, it is looked upon and organized in the same manner as the laboratories of the institute are. Each has its own laboratories, teaching amphitheatre and equipment, assistants of various grades, library and record room and carries on its own functions independently of other clinics or the institutes. As in the institutes, great emphasis is placed upon research in the clinical divisions. Recognition and promotion depend largely upon productivity.

Owing to the isolation of each institute in the university, there is ordinarily no effort made to correlate the work of the different subjects. In a few places such an effort is made, but even in such instances the correlation is loose. In one university, the departments of anatomy and physiology had worked out a correlation of lectures for three full semesters,—no effort had been made to relate the practical courses, however.

Internship

To help offset the theoretical character of medical teaching and on pressure from the medical profession, a practical hospital year after graduation is now obligatory for medical practice. It has not met the situation for most students have had no experience with patients or laboratory work and are not equipped to assume

responsibilities for the care of patients. If the practical hospital year is to be effective in correcting the defects in the medical training it will have to be reorganized and the intern will have to be given duties and opportunities to secure practical experience and be included as a part of the hospital organization for the conduct of the wards and out-patient services. At present he does not even reside in the hospital ordinarily. The assistants are reluctant to surrender their traditional place or their opportunties for clinical experience. As a result, the present position of the *medizinal praktikant* in the hospital organization is not very satisfactory and at best corresponds with clinical clerking.

Higher Degree in Medicine

Any graduate is eligible for the university degree of M.D. The examination for this is given after the *Staatsexamen* and is usually only a formality. A thesis is required and the candidate must submit to an oral examination on it before a committee of the faculty.

THE FACULTY

The faculty is made up of three classes of instructors:—*ordinarii* or ordinary (full) professors, the *extraordinarii* or extraordinary professors and the *privatdocenten.* The first is the officially appointed incumbent of a faculty chair and the official representative of his department. The second is an appointed official of the state but has no seat or vote in the faculty and takes no part in examinations or other functions of the department. There are a few honorary professorships which provide opportunity for scholars of conspicuous merit who do not hold a university appointment to participate in instruction. The *privatdocent* is permitted but not engaged to lecture and conduct exercises but usually participates actively in the teaching program, especially in the supplementary courses.

The Privatdocent

The *privatdocent* is probably the most important feature of the organization for he devotes himself to research, teaching and the care of patients. The extraordinary professors are usually chosen from the *privatdocenten.* The full professors usually have been extraordinary professors.

The *privatdocenten* represent the best of the younger men, not over 2-3% of the student body. They are very superior persons with splendid training and have been in active research work for a number of years. Usually their training has not been confined to one phase of a subject but has included all of its important subdivisions. The assistants in medicine, for example, are in charge of clinical services in the hospitals and rotate through the various wards to avoid specialization, spending six months in charge of each (heart, lung, metabolism, nervous, blood diseases, etc.) They are obliged to become competent in cystoscopy, electrocardiography, X-ray, chemical laboratory and other diagnostic and therapeutic procedures. Their research work may be confined to one field while they are obtaining a broad clinical experience. The assistants, not the interns, are responsible to the chief of the staff for the care of the patients, an arrangement of value to the assistant, of course, but to the disadvantage of the intern training. This plan insures that the patient is under the immediate and constant supervision of an experienced physician. The assistant lives in the hospital, receives a small salary and collects fees for optional courses and for insurance work, and may do some private practice.

In recent years, there has been a tendency for the assistants to live outside the hospital and to do some private practice. This is partly due to the compulsory internship which has been used in some instances to relieve the hospital of the salaries of assistants. It also serves as a protection for the assistant. If a professor leaves a post to go to another university, he may not take all his assistants with him and the new appointee may bring his own assistants. A number of the assistants now attempt to protect themselves partially by having a modest beginning in private practice. The general economic conditions developing out of the post-war deflation have accentuated this tendency.

The growth of national health insurance, to be discussed later, has had certain influences on medical education and has affected the assistant particularly. There are many disputes over insurance patients and an increasing number of such patients are being sent to the university clinics for study and opinion. The clinical diagnosis itself may not be difficult but such referred cases must have a good deal of study. They all require exhaustive reports in the nature of authoritative opinions with review of the literature to support or disprove the relationship of a given problem to industrial hazards and conditions of employment or the inability of an individual to work (endeavoring to draw the fine line that distin-

guishes between eligibility for disability insurance and unemployment insurance, detecting malingering, dealing with the insurance neuroses, etc.). Nearly all of this type of work falls upon the assistant and seriously interferes with his research, teaching and self-development and threatens seriously to damage or break down the strongest part of the clinical organization and teaching.

Hospital Relationships

The relationship of the teaching hospitals to the universities varies widely in the different centers. In states like Prussia, some of the hospitals are the property of the state and are university hospitals, built for the purposes of medical research and teaching. Others are municipal institutions. In a few places, university and non-university services exist in the same hospital and, on the whole, considerable differences in the arrangements exist. But regardless of the plan of organization, the teaching facilities are always in control of the professor, who is a university appointee and hence an employee of the state. Even in most of the municipal hospitals and clinics, whether in or distant from teaching centers, the attitude toward research and teaching is emphatic. These hospitals follow the same plan of clinical organization as the university clinics and have chiefs of the various services who devote themselves largely to the work in the hospitals. They are on salary but practically always have the privilege of private practice. The heads of the services are usually secured from the assistants in a university clinic and not infrequently these men are later called back to a professorship in a university. The quality of clinical work in most of the municipal hospitals is in the nature of the situation quite as high as that in the university clinics. Students and interns go to these hospitals for their training as freely as to the university clinics. They are likely to have better opportunities there than in the congested, hurried clinics of the teaching hospitals largely preëmpted by the assistants.

The complete separation of the teaching hospital staff and university faculty from the practitioners and the organized medical profession is a significant situation in Germany. The faculty seldom are members of the local medical societies and there is very little interchange between the hospital staff and physicians in the community. This lack of contact and coöperation has led to misunderstandings and an unfortunate schism in the medical profession which has tended to accentuate some of the problems with which the profession in Germany is confronted.

FRANCE

A FACULTY of medicine was first established in France at Paris in 1270 although efforts to organize medical education dated back to the reign of Charlemagne. It was attached to the faculty of arts of the University of Paris and for many years the students were under control of the Church. It was not until 1453 that physicians were permitted to marry, for example. At the time of the Revolution, the faculty of medicine was suppressed when in 1792 the Legislative Assembly abolished all corporations. There was no medical instruction for two years, but in 1794 a School of Health was founded with a library, museum and clinical faculties in three hospitals for the instruction of students. In 1808, the present Faculty of Medicine was created.

All education in France is centralized under the national government. At the head of the educational system is the Minister of Public Instruction. He has a Council of 57 members which has certain administrative, judicial and disciplinary as well as advisory functions. The Minister of Public Instruction controls appropriations for education and regulates courses of instruction and practically every detail of administration, allowing very little freedom among even the universities, in sharp contrast with British or German conditions.

Primary and secondary education in France is much like that in Germany. The curricula are prescribed in much more detail, however, and there is a much stricter supervision by the state, which permits very little local initiative or freedom. Modern languages and sciences are less prominent and of recent addition to the prescribed courses. Their exact positions in the scheme of general education have not yet been clearly defined.

The preliminary education of eleven years is divided into two periods, the first of four years and the second of seven years. The first period is devoted to elementary subjects and is uniform for the country. The second period is divided into two parts and may be taken in either a *lycée,* which is conducted by the state, or in a *collége,* which is conducted by a city, commune or private organization under state supervision. The first part is devoted to the classics and modern languages. The second part offers courses in Latin and Greek, Latin and modern languages, Latin and the

sciences and sciences and modern languages. Students who enter the university and study medicine may thus present preliminary education largely in the classics and languages or with a mixture of science subjects. Admission to the university is secured by passing the baccalaureate examination which marks the termination of the *lycée* described above. The examinations for the bachelor's diploma of secondary studies are set by and conducted under the supervision of the Minister of Education. The examiners are usually the local faculty.

PREMEDICAL SCIENCES

The student of medicine must, after matriculation in the university, spend one year in the faculty of science and complete prescribed, concentrated courses in physics, chemistry and natural history before he may begin the medical subjects. The instruction is elementary in character, largely by means of demonstrative lectures and simple laboratory exercises. Usually mornings are devoted to lectures and the afternoons are divided for laboratory work between physics (1), botany (1), zoology (1) and chemistry (2). All the students attend the lectures but in the large schools like Paris they are divided into groups for the afternoon section work, some doing chemistry, some botany, some physics and others zoology. They rotate through the different laboratories each week. Each student finally does all the required experiments but not in the same order. At the end of the courses, examinations are held and the student must pass in all four subjects or repeat the whole year's work.

THE MEDICAL COURSE

The medical curiculum* is regulated at present by the Decree of September 10, 1924, which requires that the course shall cover five years after successful completion of the so-called P.C.N. (physics, chemistry and natural history) and prescribes the order of the examinations. The actual courses of study of different students vary a great deal but the order of examinations is uniform for all medical schools and tends to establish a sequence in which the subjects are taken. The examinations are scheduled in relation to the *inscriptions* and consist of a first examination and seven other course examinations. Each year is divided for the

* See Appendix.

payment of fees into four *inscriptions*. The subjects of a given *inscription* cannot be passed until those of the previous *inscription* have been paid for and passed. During each year examinations are set for different subjects which the student must pass in order to proceed to the next examination, although he may attend the courses he wishes or those in which he may have obtained clinical opportunities. A thesis is required at the completion of the course.

The medical degree can be awarded only by a faculty of medicine, of which there are nine,* including Algiers. In addition to the nine faculties, there are fifteen medical colleges* in which students may study medicine. Students must spend one year in a faculty of medicine to obtain the degree.

Medical Degrees

Two medical degrees are given. The state degree entitles the possessor to practice in France or any part of the French Empire. To obtain the state degree, the student must have the baccalaureate diploma of secondary studies of the *lycée*. Before practice, the degree must be registered with the prefect of the department in which the graduate proposes to practice, of which there are 84 in France, or with the local authorities elsewhere in the Empire. The university degree is given to foreigners and does not carry with it the privilege to practice medicine in France or its possessions.

PLAN OF TEACHING

Owing to the highly centralized administration of educational matters in France, the scheme of medical training is the same throughout the country, with the exception of Strasbourg. The following discussion is based on conditions in Paris but the general characteristics are found everywhere in the country, except as modified by local circumstances.

The instruction which shows on the plan of studies is not the most important nor the characteristic feature of the training. The outstanding feature is that the training is primarily clinical and conducted by the staff of the hospital rather than the faculty of the medical school. French medical education is essentially clinical training with a single objective, the production of doctors

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* See Appendix.

by practical methods, and it relies chiefly upon a modified apprenticeship. University relationships do not alter the conception. The medical faculties (except Strasbourg) are made up largely of practicing physicians. Their status as university teachers does not require that their training, activities or viewpoint should be different than that of non-university hospital physicians. In spite of this attitude and tradition, however, France has produced a number of great scientists and there are some splendid opportunities in the country for scientific work.

The prescribed course is five years of medical instruction in addition to the year of premedical sciences but the individual subjects are so loosely held together and the hospital appointments modify the schedule so much that most students take at least six years, many seven and eight years, a few nine or more.

The Instruction

Instruction begins in the clinical subjects simultaneously with that in the medical sciences, the former in the mornings and the latter in the afternoons for most of the first four years. Two-thirds of the required attendance on lectures in general medicine and surgery are completed during the study of anatomy and physiology and before the study of bacteriology and pathology at the university. As will be pointed out, students who are successful in receiving hospital appointments will devote a diminishing amount of time to the afternoon exercises at the university whereas the unsuccessful students will continue to do the regular work in the sciences and attend theoretical courses in the clinical subjects in the afternoons. The various examinations are scattered throughout the course and students who have failed are repeating work with the regular classes. Students are allowed considerable latitude in the selection of their work and aside from the requirements of the *inscriptions* there is no systematic progression of students. All these factors tend to prevent uniformity in training although there is, of course, a general scheme.

Teaching in anatomy, physiology, histology and chemistry is confined to the afternoons of the first two years in order to provide opportunity for the student to attend clinics in the mornings. During the first year, attendance at morning clinics is optional, but inasmuch as later opportunities for the students are clinical in character, all attend the clinics from the very first day in order to qualify if they can for various appointments to be described later. Daily attendance at clinics is compulsory after the first year.

The results of the situation are obvious. Teaching in the medical sciences must be slighted. The students are preoccupied and quite overwhelmed with clinical problems for the understanding of which they have had no preparation. All the teachers of the medical sciences are practitioners, usually very little interested in the sciences themselves. Hurried elective courses in practical or applied anatomy, physiology and pathology are given by the younger clinicians to permit the student to understand some of the clinical problems, but they are given before the student has had a basic preparation in any of them. The medical sciences are looked upon as wholly subsidiary and under such circumstances the teaching in them is badly done.

The teaching of anatomy in most French schools is characterized by routine dissection and textbook cramming. The classes are very large, although the entire class can usually be accommodated at one time. The daily lectures are given by the professor. At Paris, the class of about 1,000 students in the first and second years is taken care of in eight large dissecting rooms with about twenty dissecting tables in each, making an average of five or six students to each body. The only equipment is the lecture hall and dissecting rooms. The supply of anatomical material is said to be inadequate for the large student body in Paris but is more satisfactory elsewhere, although most of the bodies sent to the medical school from the hospitals have been autopsied. The instructional staff at Paris consists of a prosector and six assistants for each room. All the prosectors and assistants are part time surgeons selected by competitive examinations.

Physiology teaching is almost entirely by demonstrative lectures with no individual practical work by the student. Laboratory equipment is scarce and there is little opportunity for the student to do laboratory work except in such schools as Lyons and Strasbourg. During the first year, a general discussion of the circulatory, respiratory, nervous and digestive systems is given. In the second year, the physiology of special organs is taken up, again largely by demonstration. In Paris, seven laboratory exercises are given for students in each of the first and second years but the sections number over 100 students. There is little apparatus and the work can only be demonstrative under the circumstances. In the smaller schools, some individual laboratory work is done. The kinetograph is widely used in the larger schools for demonstrating crucial experiments in all the science subjects and also somewhat in clinical instruction. It is argued that by this means

it is possible to show a large number of students perfect experiments and that it is a great saver of time as well as expense and animals. Physiology is taught much better in the Faculty of Science at the Sorbonne than in the medical school, but very few medical students attend the instruction there.

Histology is entirely separate from anatomy and from physiology and has its own professor and independent budget, facilities and personnel. The teaching is almost entirely demonstrative in character. The class of about 500 is divided into sections of about 170 students and a laboratory course is given twice a week for two hours for each section, each getting about six weeks of this instruction. The work in the sections is by means of lantern slides, exposition by an assistant and the uncritical study of a few slides. The same course is repeated for each section.

The required course in chemistry is taken in the second year usually and is mostly physical and physiological in nature. A series of about ten experiments is offered. Pharmacology is ordinarily taken in the third or fourth years. The class at Paris is divided into ten sections of fifty students and each has about ten lecture demonstrations. The students have no practical work.

Pathology

Pathological material and teaching are controlled by the clinicians in the hospitals. The hospitals are not related organically to the medical school except in a few places and the professor of pathology may have no connection with the pathological service of any hospital, which prevents effective correlation of teaching. The autopsy work of the hospital falls to the *internes* and assistants who have no relationship to the professor of pathology who gives the lectures at the medical school. The practical pathological work is only dead-house pathology with nothing of the physiological, experimental point of view. The great abundance of clinical and autopsy material, however, provides unrivaled opportunities to study morbid anatomy and the correlation of clinical and pathological findings. The correlation is usually confined, however, to gross lesions.

The theoretical teaching is conducted at the medical school in the afternoons of the third and fourth years. It is almost entirely demonstrative in character and usually without fresh material, for the professor is not ordinarily pathologist to a hospital. The pathology department of the medical school is usually not located

near the hospital. The chairs of pathology, even experimental, surgical and comparative, where they exist, are occupied by physicians in practice.

The teaching of pathology at Paris may be described in some detail to illustrate the situation. Twelve demonstrations of two hours each are given in the third year (afternoons). All of the material used for demonstration comes from outside the city of Paris (the professor has no pathological appointment to any hospital in Paris). About 600 students are in the course but the lecture hall holds only 200, hence the lectures must be repeated three times. In teaching the technique of performing autopsies, no demonstration is possible for the reason just cited, so the technique is presented by moving pictures. The film takes four hours to run and is presented on two successive lecture hours. The film, which is not in color-photography, gives a very imperfect picture of the tissues and the technique of post-mortem examination.

The lecture course is very well given, amply illustrated by charts, lantern slides, specimens, photographs, projections, etc. In the practical courses, students examine a few microscopic specimens which are explained by an assistant who projects slides of the lesion onto a screen. The students make no drawings or notes, they look in their own slide for the details pointed out by the assistant on the screen.

An optional course of about twenty-five exercises is offered once a year but attendance is restricted to twenty, which does not provide much opportunity for the great mass of students.

Teaching in bacteriology by the universities is very similar to that described for the other science subjects and is usually conducted by a practitioner. Research work in the subject is confined almost entirely to the Pasteur Institutes where they exist in university cities such as Paris. Occasionally, the director of such an institute also is an *agrégé* in the university, but such a circumstance is only accidental. Some instruction for students is given in the institutes, which are well equipped and staffed. The instruction, while brief, is usually very satisfactory, including enough practical exercises to give the student a little first-hand training in bacteriological technique. The atmosphere of the Institute is one of inquiry and investigation to which the student has had practically no exposure in the other medical sciences.

Parasitology is a separate subject. The instruction is largely by the usual demonstrative lectures (in sections of about 100 in Paris). An excellent short laboratory course is given at Paris.

The department there is very active and the brief course for students is excellent.

At Paris is an institute of legal medicine which is in the faculties of law and medicine jointly. An amazing variety of medico-legal problems is available for investigation and a rich material for study is provided, particularly for advanced students of the subject. Instruction of the medical students is brief and almost entirely by lectures. Every student is required to take the course and the subject is made a part of the fifth examination, at which time the student is questioned on the duties of medical men in relation to a variety of the common legal aspects of medical work.

CLINICAL TEACHING

Clinical instruction comprises three features, lectures, ward work and special courses, all three of which, however, are built upon bedside experience. The lectures are of two varieties, the systematic lectures given at the *Faculté* in the afternoons and the non-systematic clinical lectures given in the mornings at the various hospitals.

Ward teaching is the most outstanding feature of the clinical work. First-hand experience with patients is the essential emphasis in the French training. The general plan under which this teaching is carried out in Paris is determined by the organization of the hospitals there. The University of Paris owns no hospitals and does not control the teaching opportunities in any institution. All wards in the 35 or more hospitals under the Assistance Publique,—the municipal bureau responsible for the management of the city supported hospitals and other institutions,—are open for teaching. This bureau assigns wards to various physicians on the basis of examinations and among those who receive the clinical appointments are some of the professors of the medical school, both clinical and non-clinical (the professors in the medical sciences are also practitioners).

There is no connection between the professorships in a clinical subject in the university and the hospital appointments. It happens that some of the university professors in clinical subjects have no teaching wards at all and some of the professors in the medical sciences have hospital services. A considerable part of the clinical instruction is given by physicians who have no university affiliation. It is possible for a student to graduate from the University of Paris without ever attending a hospital exercise under a university professor. When a professor who has a ward service

dies, his ward service is usually given to a non-university physician. There is no permanent arrangement for the university faculty.

At present, there are about 55 clinics of 140-150 beds each in 35 different hospitals under physicians who also are on the faculty of the University of Paris Medical School. The clinics include not only general medical and surgical diseases, but also wards for skin, venereal, chronic, children's and nervous diseases, cancer, tuberculosis, obstetrics, neurology, etc., which provide a great abundance of material for all teaching needs, although control in a university sense is absent and facilities for special clinical study inadequate. The services assigned to physicians who are also on the university faculty are, of course, only a part of the 16,000 beds in the hospitals under the Assistance Publique.

The third general feature of instruction is the special courses which are given throughout the whole period of training and made necessary by the plan which puts the student in the wards before he has any knowledge of such basic subjects as anatomy, physiology, pathology and bacteriology. Intensive cramming courses in these sciences, in physical examination, history taking, diagnostic laboratory work and similar subjects are given by the younger hospital staff men so students may get started in their clinical work. Most of these courses are elective, of course, but the fees are high and the courses crowded. The laboratory subjects are used from the beginning only to help students get started in the clinical training. They are never pursued seriously for their own sake except at a few places.

The student begins his medical course by attending clinics in the mornings and taking anatomy, then later physiology and histology, in the afternoons. Attendance at morning clinics is optional for the first year but all students attend because their future success depends upon obtaining the coveted hospital appointments to be described later. Knowing the situation they start on the first day in the medical school to prepare for the externeship, which is requisite for the interneship and subsequent opportunities. From the very first day of medical training, therefore, clinical emphasis dominates all other considerations.

The Instruction

Clinical instruction begins without preliminary instruction in anatomy, physiology, pathology (which is not given until the third

year), physical diagnosis or clinical laboratory work. The instruction is the presentation, examination and discussion of clinical cases. The student is left to his own devices to get what he can out of the teaching. He is brought at once and constantly in contact with great numbers of clinical cases. The program at one hospital or clinic is made out without regard to the schedules in the other hospitals except that all clinical lectures are in the mornings and held almost simultaneously all over the city of Paris. Generally, there is a lecture of about an hour in the amphitheatre beginning at 9 o'clock, followed by ward rounds and teaching until 11:30 or 12 o'clock and then by a visit to the out-patient clinic. The required laboratory work at the medical school is scheduled from 1:30 to 4 o'clock but some of the special clinics are also given during those hours. The optional courses are given from 4 to 6 o'clock. The ward teaching is given in some hospitals early in the morning and the lecture about noon. There is no fixed schedule.

The first year student attends the clinics and follows the ward rounds every morning, observing, listening, getting acquainted with clinical methods and exposition and with the problems of clinical medicine. The course of the individual student is mapped out by the faculty in definite stages or periods during which he must attend specified types of clinics, although he is free to select the individual clinic he attends. If the one he selects is filled he must choose another. The specified clinics for the first two years of prescribed clinical teaching (*i.e.* the second and third years) are limited to medicine and surgery, each to be taken for one semester during each of the two years. Prescribed courses for other clinics are given in the following years.

Stages of Student

Students progress through their clinical training quite unevenly and a brief statement of the possibilities will throw light on the arrangement of clinical instruction. The beginning students who are assigned to a given clinic are known as *stagiaires*. They are assigned for a period of four months and are allotted two or three beds in the ward. During the assignment the student has free access to the ward to examine and question the patients admitted to his beds. He is expected to see them daily before ward rounds and to do whatever he can in history taking, examination of

physical signs and laboratory work and to learn as much as possible from his cases.

Immediately superior to the *stagiaire* is the *externe,* a student who has an appointment for two years ordinarily but who is eligible for re-appointment. The externeship is obtained only by competitive examination among those students who have passed the examinations in anatomy, histology, physiology and elementary pathology in the medical faculty and who have been *stagiaires* for one year, hence the externeship is obtainable in the second clinical year at the earliest (third year of the medical course).

The examination for the externeship consists of an oral quiz in anatomy and one in elementary pathology. A written question in anatomy is given to a candidate, he is permitted five minutes for reflection and to arrange his ideas and then is allowed five minutes to recite his answer. The same procedure follows in pathology. The entire examination lasts about twenty minutes. There is a large element of luck in this type of examination and much depends upon the bearing, speech, facility of expression and other personal qualities of the candidate. Inasmuch as all future opportunities depend upon success in the *concours* of the externat, students spend many weeks and considerable money for coaching and drilling in preparation for it. Only 30% to 50% of the students ever obtain the externeship and the unsuccessful candidates continue to attend clinics in the mornings and the university courses in the afternoons. It is the unsuccessful hospital students who are most likely to avail themselves of the instruction in the university. The successful candidates are preoccupied with hospital work and with preparing for the next examination, that for the interneship.

After a student has been an *externe* for one year or more, he may and does compete in the examinations for an interneship, the prize of clinical teaching. He may enter the competition only four times. The interneship is an appointment for four years and carries with it residence in the hospital and a sliding scale of compensation. It affords unlimited possibilities for clinical experience, post-mortem examinations and all the other opportunities that the hospital and clinics offer. Only 10-12% of the entire student body become *internes,* about 30% of those who have been *externes.* Ordinarily, the successful student obtains an interneship in the third or fourth year of his course. Competition for this appointment is getting keener, about eight or ten *externes*

now complete for each *interne* post. A student who accepts the *interne* appointment cannot graduate until he has completed the service. Hence for the best student, the medical course is about eight years in length. For the student unsuccessful in the hospital competitions, the course is about five years. For those who have been *externes* and have failed in the interneship examinations, the course may be any length between five and eight or even more years.

The examination for the interneship covers two hours and is based on a written examination in anatomy and pathology followed by an oral examination in both subjects. No practical laboratory or bedside examination is given. The whole test is based on theoretical questions. The outcome depends largely on the ability of the student to quote the literature and present quickly and clearly what he has learned from text-books, ward teaching and drill masters. Original work or special ability weighs very little in the selection of *internes*. The successful candidates arranged in the order of their respective grades in the *concours* choose the service which they desire to take. Theoretically the chiefs of the services have no voice in the selection of their *internes* but as a matter of practice they do. Students are promised services sometimes three or four years in advance providing, of course, that they negotiate the examinations successfully. The examinations for the externeship and the interneship are not conducted by the chiefs of the services but by the Assistance Publique and the appointments are hospital positions.

The Student Body

From the above discussion, it is evident that clinical instruction must be carried on in the wards for a heterogeneous body of students although the teaching is not ordinarily pitched to the beginners. Three distinct groups of undergraduate students attend the clinical lectures and ward clinics.

The largest group is made up of beginning students and those unable to obtain the externeship who follow the clinics possibly for years and by constant attendance, repetition, reading, drill-masters, a few practical exercises and great perseverance are finally able to pass the various examinations. This is the group which makes up the large portion of the university students. The second group includes the *externes* who are attached to the clinics and who devote themselves as completely as possible to

clinical work and to preparation for the interneship examinations. The third and smaller group is the *internes* who learn clinical medicine by long, intimate association with the clinic and who during the period of the interneship take the required clinical examinations. More than half the students do not receive an adequate clinical experience before graduation, another forty per cent obtain a good preliminary experience but with little personal responsibility, while about ten per cent receive what is probably the largest and most varied clinical experience provided for medical students anywhere in the world. Unfortunately, however, that experience is not preceded by anything like an adequate foundation in the preliminary and medical sciences.

The Instruction

The general plan of instruction may be described briefly. The lecture is ordinarily a didactic discourse intended to give the students, most of whom have had no anatomy, physiology or pathology (or are just starting the first two), enough information for them to appreciate what they are to see in the ward clinic following the lecture. The lectures touch on some of the important features of the medical sciences that relate particularly to clinical problems. The clinics, for the purpose for which they are intended, are usually well conducted and carefully worked out by the lecturer who does all he can to orient the student and to give him the simple elements of clinical study.

After the lecture, the group, ranging from forty to one hundred and made up of beginning students, *stagiaires, externes, internes,* staff, visiting physicians and graduate students, assembles in the ward for bedside instruction. Provision for the crowd is made by moving the patients' beds together and clearing one end of the large ward except for the patient or two who will serve as the text of the morning.

The *stagiaire* to whom the patient has been assigned reads the history he has taken and is questioned by the professor. He probably makes some comments about physical signs and may venture an opinion about the condition. Then the *externe* to whom the patient has also been assigned dilates upon the previous presentation, reports on laboratory, X-ray or other findings, tells of the physical findings and then is quizzed by the professor. Finally the *interne* who has responsibility for the patient is called upon to give his opinion as to diagnosis and treatment and

is in turn questioned. Then the professor takes up the entire problem and discusses the differential diagnosis, prognosis and treatment, citing the literature, touching upon the latest theories in such cases and suggesting possibilities of treatment. The whole exercise when thoughtfully worked out is a remarkable exposition for the students, although many of them are inadequately prepared in history taking, physical diagnosis, pathology and clinical laboratory work to get the maximum benefit from it.

During the first year or two, most students attend the large required clinics but after that they break up into smaller groups to attend the required special clinics and seek opportunities in the unofficial clinics if they have not been successful in the *externe* competitions. In the smaller groups, the student gets close to the clinical problems and may get some first-hand experience.

There are many variations of the general plan of teaching as outlined above but the statement illustrates the scheme. The *externe,* as indicated earlier, has opportunities somewhat analogous to a clinical clerk in the British plan of training but the experience is not as good nor is the student as well grounded in the necessary sciences. Reference has been made to the opportunities open to the *interne.* Of particular importance is that of doing all the autopsies on the service to which he is attached, an opportunity for correlating clinical and pathological findings not offered elsewhere to students or even older physicians. There are no pathologists to the hospitals. The post-mortem examinations are, like the clinical material, under control of the chief of each service. The *interne* has access to the small laboratories on each service but the laboratory facilities for the *stagiaire* and *externe* are usually inadequate.

The fact that in France clinical training is in control of the hospital staffs and not the university can be re-emphasized. The hospitals are completely independent of the universities and the control of medical education is in their hands. The faculty of medicine is a nominal body only except that it controls the degree upon which the right to practice depends. The whole plan of training aims primarily to select and to provide opportunities for the superior student and because of that conception the training is upon a highly competitive basis.

The out-patient services are used very little for regular instruction, except in some of the specialties, and there are no features of this work which need particular comment.

The student fees* are chiefly for examinations and *inscriptions*. They total about 1,640 francs for the entire medical course and are the same for all the medical schools.

The number of medical students in France* in 1928 was 11,725, including those working for university and state degrees and diplomas in legal, colonial and tropical medicine and in other special departments. There were 2,753 foreign students. France trains most of the physicians for the Empire and the number of students is large in comparison to its own population of about 40,000,000. European France represents only 5% of the land area of the French Empire. The number of physicians in France in 1928 was 24,830.†

The student body is usually large and heterogeneous, particularly in Paris, because of the mixture of students at every stage in training. Each student is largely on his own responsibility, guided in his work only by the numerous examinations. Practically all students graduate sooner or later, more than one-half without ever having had the clinical experience represented by even the externeship. This is justified on the ground that the public will in the long run judge the competence of the physician and the medical school faculty should not take too much responsibility for seeing that individual students get a complete training. The responsibility is upon the student. It is claimed that the presentation of clinical problems from the very beginning of the training is particularly adapted to the temperament and impressionability of the French student. Medicine is taught in France primarily as an art, not as a science.

The French medical students in Paris lodged a complaint against the Minister of Public Instruction in the fall of 1929 for the leniency of that official in permitting foreign students to study medicine in Paris* and to get the state degree which permits its holder to practice in France. It was claimed that one-fifth of the practitioners in Paris are of foreign origin and that the profession is over-crowded. It was charged also that the Minister was endeavoring to anticipate the need of physicians who would be willing to accept work under the new social insurance scheme due to be put into effect in 1930. The Minister finally announced that

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* See Appendix.

† Ministére De L'Instruction Publique.

foreign students will not be permitted any longer to present their final thesis and thus obtain the right to practice medicine in France until they have secured the bachelor's diploma of secondary study from a French institution.

FACULTY OPPORTUNITIES

After completion of the interneship and the examinations a graduate is eligible to compete for a clinical assistantship, an appointment lasting three years. If he succeeds in that, he may then take the examinations for *agrégé,* a position corresponding closely to that of assistant professor and carrying an appointment of nine years. Examinations are held as the posts become vacant. Separate examinations are held for each subject,—anatomy, pathology, medicine, surgery, etc. All qualified physicians are eligible for the examinations and the appointments are made from the list of successful candidates. Publications, an impromptu essay and the delivery of a lecture on an assigned subject after only a few hours preparation are also required. The examinations are severe but purely theoretical. Knowledge of the literature and facility of exposition are the most important qualifications. Original contributions in investigative work count very little in the absence of the other qualifications. Although the appointment is ordinarily for nine years, the Decree of March 13, 1924, provides that those who at the time of their appointment do not reserve the right to practice their profession will, after two years of teaching, receive appointments without limitation as to length.

The *agrégé* in a clinical department is a lecturer. His appointment carries with it no clinical facilities for, as emphasized earlier, the university does not control the hospital services. The *agréré* may obtain a clinical service in a hospital competition however, and can give practical instruction in his wards and clinic there. The method of appointment of chiefs of services by the Assistance Publique was referred to earlier. The clinical professors in the university are selected only from the limited number of *agrégés,* but the academic posts carry with them no facilities but a lecture hall. The professors must obtain laboratory or clinical opportunities independently. Age is an important consideration in the selection of professors. Young men have very little chance of advancement in the prevailing system and recognition for scientific effort is uncertain.

Effect of Examinations

The system of selecting teaching personnel and of making promotions almost entirely on the basis of examinations and the character of the examinations need a word of comment, although not directly associated with the problems of medical education. The examinations come so frequently that ambitious old as well as young physicians are under constant tension and have very little free time to pursue any special studies in which they may be interested. The examinations are always general in character and the candidate at every stage in development must keep abreast of a wide variety of correlated topics rather than make an intensive study in a single field. Furthermore, the examinations are largely theoretical and based on the literature of the subject. Very little weight is ordinarily given to original contributions, particularly in clinical fields where the volume of papers written is counted more heavily than their content. Special advantages accrue to the fluent, quick minded, clever candidate in the oral examinations, the essays and the lecture requirement which are the important features of the examinations. The whole scheme handicaps research and the development of personnel trained in the fundamental subjects.

Situation at Strasbourg

The plan of medical instruction at Strasbourg is an exception to the scheme elsewhere in France. The various institutes of the medical school and the hospital are closely grouped together and it is possible to correlate the work of the different subjects. Each of the sciences has its own institute and among them is an institute of embryology, the only one of its kind in France. The science subjects are taught by professors who devote themselves to their subjects, enabling them to conduct investigation and teach students. Students have good courses in the basic subjects and the laboratory exercises are satisfactory. The professor of pathology is also pathologist to the hospital and has charge of all the pathological material and autopsies.

Strasbourg is the only faculty of medicine in France that has its own hospital. There are thirteen clinical services in the hospital to which are admitted first and second as well as third class patients. On each service are offices and consultation rooms for private patients. All hospital appointments are made by the University.

Students are not permitted to enter the clinical services until after they have completed about two years in the medical sciences and have a reasonably adequate basis for beginning their clinical instruction. The appointment of *externes* and *internes* rests with the faculty, not with the hospital staff alone as elsewhere in France. The general regulations of the Minister of Education governing the medical curiculum are, of course, applicable to Strasbourg but the plan in operation is quite unlike any elsewhere in the country.

AUSTRIA

THE training is very similar to that of Germany except for minor details of organization and the fact that the course covers ten semesters instead of eleven.* The examinations are also arranged differently.

The first *Rigorosum* may be taken in two parts. The first includes biology, physics and chemistry for medical students and the second includes anatomy, histology and physiology. The first part is taken at the end of the second semester ordinarily and the second part at the end of the fifth. The second *Rigorosum* covers pathology, pharmacology, internal medcine, pediatrics, psychiatry and neuropathology, all of which are practical tests except pharmacology and pathology. The third *Rigorosum* includes surgery, obstetrics, gynecology, ophthalmology dermatology, syphilis, hygiene and legal medicine, the last two theoretical only.

The faculty at Vienna contains an independent chair of medical chemistry. Lectures are given by the professor an hour a week for one year which cover inorganic and organic chemistry of special value to medical students. A laboratory course one afternoon a week continues throughout the year. Physiological chemistry is an elective at Vienna. About 20% of the students take the course.

The plan of instruction in anatomy and physiology is not different from that in Germany. Anatomy lectures extend over two semesters and the dissection is given in the first two winter semesters. The examinations in anatomy are severe, about 40% of students fail in the first trial (first *Rigorosum*). Physiology is given at the same time as anatomy. A lecture is given every day and two hours of two afternoons a week for two semesters are devoted to laboratory exercises. Pharmacology is an elective subject but more than 75% of the students take it. The course is largely demonstrative lectures. Small groups are given practical laboratory demonstrations by assistants. Pathology is taught largely by demonstrations and lectures. The laboratory course is elective and 20% of the students take it. Every student is obliged, however, to do three autopsies before completion of the

* See Appendix.

course. Usually three to five pairs of students do parts of a single autopsy under the guidance of an assistant.

The clinical instruction is by demonstrative clinics much as in Germany. The student obtains practically no first-hand clinical experience during the regular course. He gets most of his practical experience during the long vacations, as in Germany. In obstetrics, the student must spend two periods of five days each in the women's clinic on 24 hour duty and see all cases delivered during the period. The obstetrical clinics afford an abundance of clinical material. The three large separate clinics for obstetrics and gynecology at Vienna, each containing 300 beds, are excellent. There are 14,000 deliveries annually in Vienna. The Allgemeines Krankenhaus is the chief teaching unit at Vienna. It includes 3,500 beds divided among many different services each of which has its own out-patient service. Practically all cases terminating fatally are autopsied (about 25 autopsies a day). The great abundance of clinical and pathological material offers almost unlimited opportunities for the demonstration and exposition of clinical problems.

The student body in Vienna (2,539 in the summer session of 1929) is mixed. Only about one-third of the students come from Austria, an equal proportion come from Germany and the balance from other neighboring countries to the north and south. About 16% are women.

The income of the teaching personnel in Vienna is very low. The salary of a professor begins at about $1,200.00 a year and the maximum is about $1,700.00. The small student fees (1 schilling [about 14 cents] per weekly lecture hour per semester for those who can pay and 3 schillings for foreigners except Germans) give a professor about $350.00 a year additional. The younger personnel, of course, receive considerably less. A first assistant in a clinic of 240 surgical beds, a man of 10-15 years' experience in surgery and with large responsibilities in teaching and hospital work, receives an equivalent of $1,000.00 a year from his salary and student fees.

The problems of medical practice and the postgraduate courses at Vienna will be touched on in a subsequent chapter.

SWITZERLAND

THE preliminary requirements and the course of study is in every essential detail analogous to those in Germany, even in the French-speaking sections of the country. Switzerland has seven medical schools, far more than are needed for the training of physicians for that small country. Before the war many of the medical students came from Russia, Poland, Turkey and other countries, but now the number from outside is much smaller with the result that the teaching facilities are greatly in excess of the present needs. For a number of reasons it will be difficult to reduce the number of medical faculties to the few that are really needed. Such a step is clearly indicated for economic as well as educational reasons, for the separate schools cannot be supported adequately.

Instruction in the medical sciences is largely by demonstrative lectures as in Germany and Austria and covers five semesters. Very little laboratory work is done in physics and chemistry. Dissection in anatomy is thorough and complete. The laboratory work in the other sciences is small in amount. It is frequently elective only and more demonstrational than experimental in character.

Clinical instruction covers six semesters. The hospital and outpatient services are ample for good teaching. Particular emphasis is laid in clinical instruction upon the patient as a whole. Specialization has not become prominent in either practice or teaching in Switzerland. Most students on completing their training go into general practice and because of the topography and climate of the country must be competent to deal with most illnesses in the area in which they locate. The economic condition of the people and the high proportion of the population who are covered by health insurance has a bearing also on the general character of practice for which the student is being prepared.

Although there are seven different medical schools in the country, there is very little migration of students. This is partly due to the greater uniformity in instruction than was true twenty years ago.

THE NETHERLANDS

THE general plan of medical education in the Netherlands resembles that of Germany and methods of instruction are quite similar. The required curriculum is considerably longer, however, and there are more examinations. The three universities of Leyden, Utrecht and Groningen are state universities whereas that at Amsterdam is a municipal institution, but the plan of medical training is uniform in all.

The Dutch student prepares for the university in one of the several types of secondary schools from which he must present a leaving certificate. The *Gymnasium* provides a six year course emphasizing Greek and Latin and is said to be the most conservative secondary school in Europe. The higher *Burgher* school gives a five year course devoted largely to modern subjects and science and offers neither Greek nor Latin. The *Lyceum* offers Latin and science courses and is otherwise similar to the higher *Burgher* school. All students entering the university must have had English, French and German. Any student admitted to the university may study medicine but not a large number do so because of the length of the training and the severity of the course requirements and examinations. There is no separate medical school organization. All departments are integral parts of the university.

The Examinations

The medical course itself is governed by the various examinations. The first examination may be taken at the end of the first year and is known as the first *Candidaatsexamen.* It covers the subjects of physics, chemistry and biology. The second *Candidaatsexamen* can be taken two years later, *i.e.* at the end of the third year of medical studies, and covers anatomy, physiology and pharmacy.

The two following years (fourth and fifth) are spent in attendance on theoretical clinical lectures, largely demonstrative in character. They cover every phase of medicine, surgery and obstetrics and are supplemented by talks and demonstrations in pathology, pharmacology, physical therapy, bacteriology and allied topics. The student does a little work in the out-patient service but does

not go on the wards for any clinical instruction. At the end of this long, unbroken exposure to theory, he is eligible for the *Doctoraalexamen,* a purely theoretical examination in the clinical subjects.

After passing the examination in theory, the student enters the wards as a "co-assistant" or "sub-assistant" and rotates through the various wards, three months in medicine, about three months in surgery, six weeks in obstetrics, a similar period in psychiatry, pediatrics, neurology, skin diseases, etc. The services are not taken in any definite order and include out-patient as well as in-patient experience. The practical work covers about two more years, making a total of seven. It is similar to clinical clerking described earlier but is not quite as satisfactory because the periods of experience are shorter owing to the larger number of subjects covered. The rotation through the different services is too rapid. Clinical material is abundant and diversified but the number of "co-assistants" is limited (sixteen in the medical clinic of 132 beds and five in the propaedeutic clinic of 60 beds at Amsterdam, for example). Students unable to get co-assistantships in the university clinics are permitted to secure their experience at the municipal hospitals in Amsterdam or even in Rotterdam.

At the close of the ward period, the student must first pass the *Semi-artsexamen* and then the *Artsexamen.* The former is a practical examination in medicine, pediatrics, pharmacology and pathology and usually comes about one year after the *Doctoraalexamen* and the latter is a similar test in surgery, obstetrics, ophthalmology and dermatology about one year after the *Semi-artsexamen.* Completion of the seven year course conveys the title of doctor and the right to practice in the Netherlands and its colonies. The usual age of graduation is about 26 years.

Every student must follow the plan outlined above which aims to insure that each graduate shall be thoroughly grounded in the theoretical as well as the practical aspects of all fields of medicine. The period of theoretical training is very long (many in the Netherlands believe it is unnecessarily so) and during it the student has little opportunity to associate the theory with practical application, a fault which the Dutch emphasize but which they have little inclination to change. The authorities, having in mind the training of physicians for their isolated and distant colonies (the population of the colonies is ten times that of the Netherlands) as well as the medical needs at home, are reluctant to endanger the present high level of medical education by shortening

the course. They are obtaining an adequate number of physicians for their needs and are not in a mood to make minor changes in their present requirements.

The Instruction

The teaching procedures need no special comment. The instruction in anatomy covers two years and consists of three hours of systematic lectures a week on general anatomy, one on topographic anatomy and one on embryology. Dissection is confined to the afternoons from one-thirty to four o'clock. Students may dissect only under the supervision of a demonstrator. The work is performed very methodically under definite directions and supervision to insure good results. The courses in histology and embryology extend over three years. In the practical exercises, the microscopic preparations are furnished to the students in a finished state so they can devote their time to the study of them rather than to histological technique. Lectures of a demonstrative character are prominent but all students are required to do much more laboratory and practical work than in Germany or France. Emphasis is placed upon good training for all students, not special opportunities for the few such as with the *interne* in France and the *privatdocent* in Germany, with the result that probably the average of professional competence is higher in the recent graduate of the Netherlands than in the average recent graduate of any country. Students of superior ability are given every encouragement but not at the expense of the others.

After graduation a small number of students take hospital appointments of varying length. There is no state requirement in this regard, however.

It is of historical interest that practical clinical instruction as a function of university medical training was first put into practice at Leyden as early as 1630 and the tradition of sound clinical experience for the student has continued to the present time. Students were expected to examine patients in the presence of the teachers who criticized their observations and opinions. The students objected a good deal to this procedure and it was dropped for a time. Early in the eighteenth century Boerhaave revived the practice. Incidentally, it was largely due to his great ability that the medical clinic at Leyden became the most famous in the world. True university instruction in clinical medicine began in his clinic. His pupils were important factors in the early programs at Paris, Edinburgh and Vienna.

DENMARK

THE plan of medical training in Denmark resembles that of both France and Germany. It is built upon a thorough primary and secondary education, certain features of which may be discussed briefly.

Elementary education is compulsory, but not entirely free, and all types of schools are under state supervision. The elementary school, *Folkeskoler,* provides the instruction during the entire period of compulsory education. An interesting feature of this training is the emphasis on music, which all pupils must take. Every teacher must study singing, violin and the organ. Physical education is compulsory. After completion of the elementary school, the pupil may go on in a continuation or Folk High School of which there are numerous forms, cultural and technical. A distinctive school in Denmark is the People's High School which any person 18 years of age or older may attend regardless of previous education. This school provides cultural, agricultural and technical adult education.

Between the primary school and the *Gymnasium* there is a special school known as the intermediate school or *Mellemskoler* which is peculiar to Denmark. Graduation from its four year course admits the pupil to the *Gymnasium* and from its five year course to examinations which qualify the student for lesser civil service appointments, opportunities in commerce and business and admission to schools of pharmacy, dentistry and veterinary medicine.

The *Gymnasien* offer three courses,—classical, modern languages and scientific. The modern language course, including English, French, German and Latin and some science and mathematics, is the one most commonly followed by students entering the university. In order to matriculate in the university, a student must pass the *Artium,* the final examination of the *Gymnasium,* and must take additional science courses if he is to study medicine. Women students are accepted in the medical faculty on an equal basis with men.

THE MEDICAL COURSE

The medical course is ordinarily about seven years in length, each year divided into two semesters of about three months each.*

* September to December and February to May.

The semesters were formerly longer but have been reduced in length to provide more time for the faculty for investigative work. During the short semesters, the theoretical and practical work is of necessity highly concentrated. The classes are large and, owing to the small facilities and staff, some of the courses must be repeated two or three times. The first year corresponds with the P.C.N. in France during which biology, physics and chemistry are studied before taking up the medical subjects.

Every student must spend the forenoons of the first year of the medical course in the hospital wards. This requirement is intended to familiarize the student with the various problems, technical procedures and purposes of the theoretical and science work to follow and to give him an idea how patients are handled. The students listen to the assistants and interns take histories, watch them make physical examinations, venepunctures, do laboratory work, dressings and special examinations, watch a few operations and make regular ward rounds with the chief of service. At the rounds they take notes, fill out requisitions, enter reports of laboratory findings and make themselves generally useful. They do not carry out any nursing procedures or do any of the orderly work. During the afternoons they attend lectures and laboratory work. The scheme serves to help students decide whether or not they really want to study medicine. On the whole, the plan is hardly worth the time it takes. Its benefits are obtained in a few weeks and the balance of the year spent in watching clinical examinations and treatment is of little value for the clinical contacts are not continued as in France, for example. The students concentrate on the science subjects for the next two years, during which there is no clinical work. The question of discontinuing this hospital period and devoting the time to the science subjects is being considered.

The next two years are taken up by anatomy, histology, embryology, physiology and biochemistry. The courses are largely theoretical, demonstrative lectures. There is a great shortage of anatomical material and dissection must be done in groups of six. The courses in physiology and biochemistry are also largely demonstrative lectures given during three semesters, supplemented by a limited number of illustrative laboratory experiments the character of which is sharply limited by the anti-vivisection statutes. The students must do their own laboratory work under what little supervision three staff men can provide for a class of 200 students.

During the courses in the medical sciences, the students do not attend clinics or hospital exercises.

The examinations in anatomy, physiology and physiological chemistry are always oral and a student may not proceed to the clinical courses until he has made a satisfactory record in these subjects as well as in the examinations in physics and chemistry. A student who fails in the examinations as a group must wait one year for a re-trial and is allowed only three efforts. A considerable proportion of the students are delayed a year or more at this stage in the course.

One point of particular interest in connection with the examinations is the use of two external examiners appointed by the state who are passive examiners. They listen to the questioning but do not participate in it. They keep their own ratings of the students and their grades are a part of the final marks.

Another feature of the examinations, all oral, is the attendance of the other students who listen to the questions and answers and become acquainted with the procedure which they will face later. Usually a considerable number attend each examination.

After the medical sciences are completed the student takes up pathology and the clinical subjects. The teaching of general pathology (pathological physiology, immunity, bacteriology, parasitology) is separated from that of morbid anatomy. Each has its own chair and separate institute, as is also the case with hygiene and medical jurisprudence. The course in morbid anatomy comprises theoretical lectures, demonstrations of diseased organs, fresh and museum specimens, morbid histology and the performance of autopsies. These exercises are distributed over two years.

Clinical Instruction

The clinics are very similar to those described in the German plan. The student, as in Germany, does not work on the wards except in groups to attend demonstrations in physical diagnosis or to make ward rounds but he has special opportunities in the small teaching groups for which teaching rooms are provided on the wards.

Regular instruction in clinical subjects is given in periods of two to three months and each student is largely on his own responsibility for attendance upon the clinics which are given in the Rigshospital (900 beds) and the Municipal Hospital (1,000 beds) in Copenhagen. There are two medical and two surgical teaching services of about 125 beds in each of these hospitals.

The student takes courses in physical diagnosis and history taking on the wards in the fourth year but is not ordinarily allowed to deal individually with patients on the wards at any other time.

The most valuable ward instruction is in small informal groups in teaching rooms off the main wards where the discussion of problems and patients can be carried out rather leisurely without interfering with the routine of the ward and where there will be nothing to distract the group. Here the symptoms, physical and laboratory findings, diagnosis and treatment can be discussed fully without interruptions. The most important features of the training are the study of texts and medical literature, the demonstrative clinics, the small group instruction on clinical cases and emphasis upon the basic medical sciences, largely of a theoretical character.

The final examinations are comprehensive in character and are written and oral. As in the case of examinations in the medical sciences, two external examiners appointed by the state and known as "censors" listen to the questions. They may suggest questions to the examiner but usually do not. Two-thirds of the final grade of the student is made up by the marks of the two censors. Medical students attend the oral examinations and listen to the questions and answers.

It is commonly stated that in Denmark the students receive special instruction in the practice of preventive medicine in the individual but no such special training is found there, however. Each student does receive an excellent presentation of bacteriology and hygiene and the work in public health is very good but the courses in the subjects are in general not unlike those found in other countries, though better than most of them in America. In internal medicine, pediatrics and obstetrics special emphasis is placed upon early diagnosis and treatment, the care of normal infants and children, adequate prenatal care and similar features of a preventive nature, as is done in the best teaching of these subjects in other countries. No separate courses in periodic medical examinations of adults or in personal hygiene are provided, however, nor are these topics stressed particularly.

Denmark is primarily an agricultural country with few problems of industrial hygiene, for example. Many of the people are familiar with the bacteriology of milk and the soil and with diseases of animals. The general level of education in the population is high with the result that public opinion on health matters is sound and willing to support all forward looking proposals. The health insurance plan of Denmark and the method of dealing

with specialism in medical practice, to be discussed later, may be cited to illustrate fields in which public opinion has endorsed progressive efforts to insure the best type of medical care for the population. The public health program of the country, largely governmental in character, is pre-eminently good.

During the long vacations, many of the students supplement their theoretical training by serving as student helpers in the hospitals, not only in Copenhagen but also in the small institutions in the country. There is no home or district medical teaching to provide experience as in Edinburgh, for example. About one-half of the students take an internship after graduation, usually consisting of six months in medicine and six months in surgery. Ordinarily the student cannot get such an appointment until two years after graduation and he frequently spends the period of waiting doing voluntary hospital work and visiting clinics. The medical profession is overcrowded and the young physician must wait for his opportunities. Any physician who desires to take care of obstetrical patients in his private practice must spend one month as a resident on an obstetrical service after graduation.

The Institute of Legal Medicine at the University of Copenhagen was originally designed as a research and teaching institution but its function has been greatly enlarged. All medicolegal investigations in Denmark are now under its control. The professor of legal medicine is the expert for the courts of Copenhagen. Two-thirds of the legal autopsies in the country are performed at the Institute. In Jutland, such autopsies are in charge of a special governmental dissector at Aarhus. The Institute provides instruction for medical students, students of state medicine, state physicians, police employees and law students.

Every specialist in Denmark must obtain a specified training and a most interesting plan of carrying out this requirement has been developed. Discussion of it belongs properly to the chapter on postgraduate training.

There are 2,447 physicians in Denmark (1929) compared with 2,014 in 1922 and 2,236 in 1925, a ratio of one physician to about 1,450 persons.

PUBLIC HEALTH

Public health work is particularly well organized. The supreme authority is the Ministry of Justice which heads the police service as well. In the Ministry is the Board of Health headed by a

full time medical officer appointed for life. This Board superintends all matters concerning sanitation, public health officers, medical practitioners, dentists and midwives and is in charge of all institutions that are under the poor laws and all hospitals and sanatoria. In 1914, the country was divided into medical districts or cantons each headed by a cantonal officer appointed by the king. Each cantonal officer must pass a special examination prepared by the medical school and Board of Health. Every section of the country thus has its local district medical officer who serves as adviser to the local county council and other local authorities.

The medical aid societies will be discussed in a later chapter. Drugs are carefully controlled by the government and only fully qualified practitioners who have had the accepted seven years course are permitted to practice. The medical profession has been conspicuous in its leadership for health work of all kinds.

There are about 3,000 graduate nurses in the country. The course of training at Copenhagen is the best in Europe.

SWEDEN

MEDICAL education in Sweden is based on the same type of thorough primary and secondary education as exists in Germany and other continental countries. Elementary education covers three years. The secondary school education is divided into two periods. The first is five years in length and includes modern languages, elementary science, geography and mathematics. In the sixth year, pupils may enter one of three different schools for a period of four years, the *Gymnasium,* the *Realgymnasium* or the *Real Schule.* Practically all medical students are graduates of one of the *Gymnasien,* only a few prepare in the *Real Schule.* The *Gymnasium* emphasizes Latin (Greek is optional) and provides instruction in modern languages. The *Realgymnasium* emphasizes mathematics, the sciences and modern languages.

The medical curriculum in Sweden is much longer and somewhat different from that in the other countries described. Completion of the required course confers the degree of licentiate in medicine. The course is divided into two general divisions similar to the courses elsewhere, the first consisting of anatomy, physiology, bacteriology, pathology and pharmacology, the second of the clinical branches, special pathology, legal medicine, public health and allied subjects. The basic sciences of chemistry, physics and biology are taken in a university before beginning the medical subjects.

Instruction in anatomy and histology extends over the first year and a half of the medical subjects. Most of that period is devoted to these subjects. Histology and embryology are independent of anatomy at Stockholm, for example. The latter half of the second year is devoted largely to physiology and biochemistry and these courses continue into the third year when pathology and pharmacology are added. The amount of practical work in physiology and chemistry is rather limited. During these three years, the student attends no clinical exercises. It is felt by many in Sweden that the period devoted exclusively to anatomy and histology is too long.

Clinical instruction begins the fourth year and may extend from four to six years or longer, during which the student attends

hospital work twelve months of the year, although his required schedule does not regularly occupy more than a half of each day. Nowhere, however, does a student have the free access to hospital wards for such a long period as in Sweden. In the plan of clinical instruction, the student's work is concentrated upon one subject at a time and avoids the overlapping and mixture of courses seen in the German plan. Six months are given over entirely to medical subjects, history taking, laboratory determinations, physical examination, etc., and this experience is followed by a similar period in surgery. The student keeps his own records of patients, his findings, progress notes and the treatment given to the patients he has seen.

After this preliminary period of a year in medicine and surgery, the student goes through shorter but concentrated courses in obstetrics (4 months), pediatrics (3 months) and the clinical specialties. Then the student returns for another period in medicine (4 months) and surgery (4 months), at which time seven or eight beds are assigned to him. The ward teaching is very similar to the clinical clerking in England but is longer, follows a considerable preliminary clinical experience and is better correlated with laboratory opportunities. After securing further experience in the ward work in the several major clinical divisions, the student returns before graduation for a final period of two months in medicine and one month in surgery. A total of 18 months is devoted exclusively to medical instruction and 9 months to surgery, in addition to all the teaching in the specialties.

The Instruction

The mornings are occupied with informal lectures, clinical demonstrations to small groups and section work on the wards. The afternoons are almost entirely free in many of the courses except for autopsies, pathological laboratory work and follow-up on ward cases. In the four months course in obstetrics, the students are divided into pairs and each pair takes turns on 24 hour duty for six days, during which time they attend all or as many deliveries as they can. They have no other assignments during the period. Each student assists in 40 to 50 deliveries.

There is only a relatively small number of lectures and demonstrations. Most of the clinical work is practical. The required courses occupy only a part of each day with the result that students have considerable free time during which they may do extra

school work, go out to practice in rural communities under the special student license or seek employment to defray their living expenses. The length of the entire course (sometimes ten years or even more) makes the matter of living expenses a large item. The schedule is very flexible and large responsibility is placed upon the student for his own training.

The opportunities for practical training in the study, follow-up and care of patients, for reading, conferences or special investigation of cases are probably the greatest in Sweden of any country. The course as a whole combines the strong elements of the instruction in Germany, France and England, which explains its length and completeness. Many believe, however, that the required course is unnecessarily long but the authorities are aware that most of the students will go into communities where they will be called upon to meet every type of medical problem, often without the possibility of consultation or the advice of specialists, and they are unwilling to take the responsibility of lowering the present requirements which they believe are necessary to meet the conditions of medical practice in Sweden.

Nursing Procedures

For a period of two months during the fourth year, every student is required to take a practical course in nursing procedures to which he devotes four hours a week. The reason for this requirement is that most of the students will go into general practice in sparsely settled districts, at least for a period, or where expert nursing services will not be available and the doctor will be obliged on occasion to carry out the nursing procedures or will be called upon to instruct some member of the family in them.

Psychiatry, Forensic Medicine

The teaching of psychiatry is evidently very well done and made an important feature of the course, particularly the mental problems of children. Every student must become familiar with the normal mental development of the child, with the behavior disorders and the functional nervous disturbances of adolescence. The teaching of the psychiatry of childhood is closely correlated with other phases of pediatrics.

Forensic medicine is taught in close correlation with pathology and psychiatry. At Lund, the Institute of Pathology and Forensic

Medicine is located close to the large teaching hospital. The place of forensic medicine in the scheme of medical practice and teaching in Sweden gives it considerable importance particularly for those who go into the community to serve as medical officers. It is a major activity of the highest medical authority in the country, the Board of Medicine, which maintains its own chemical, histological and serological laboratories for this work and utilizes the staffs of the state hospitals for mental diseases for psychiatric problems and the pathological institutes for the post-mortem investigations.

The examinations in each subject are always practical and thorough. They are designed particularly to test knowledge which will be needed in practice. The degree of Doctor of Medicine is given on the basis of an acceptable thesis on a selected subject.

Medical Practice by Students

Medical students are privileged to go into rural communities and substitute for local physicians under temporary student licenses which are issued by the state after consultation with the faculty of the school in which the student is studying. The licenses are limited to a specific locality for a definite time. Students who take these practices do not get university credit for them. They only lengthen their training by doing so. Many students take periods of practice to help defray their expenses in school.

Upon completion of the medical course most students endeavor to secure one of the several types of government positions, one of which is designed to provide medical services in the sparsely settled areas of the country. These positions carry a salary of 9,000 kronen a year with the privilege of private practice under the conditions prescribed by the appointment. Physicians can expect to make a combined income of 15,000 kronen or more on these appointments. About one-third of the medical graduates each year are able to get such appointments. Nearly all recent graduates and many older physicians in practice try each year to get one of these appointments. Sometimes thirty men apply for a single appointment.

At present there are about 2,200 practitioners in Sweden for a population of somewhat over 6,000,000, making one doctor to about 2,900 persons. It is claimed that there is no shortage of physicians and the assignment of physicians on the government service mentioned above gives what is claimed to be satisfactory medical care for the entire population where private practice does

not provide it. Incidentally there is no compulsory sickness insurance in Sweden* as in Germany, Switzerland, Austria or England and no universal voluntary insurance as in Denmark.

The hospital and teaching facilities in Sweden are much the same as in other continental countries. At Lund, a city of 25,000, is located the teaching center for southern Sweden. The teaching hospital contains 800 beds and provides splendid opportunities for teaching and research as well as an excellent medical service for the area. The budgets of the schools are small and salaries are low but competition for teaching posts is very keen.

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* Except employer's liability insurance.

POSTGRADUATE MEDICAL EDUCATION

NO special study of postgraduate medical training was made but some information on that subject was obtained during the study of medical education. The hospital training of recent graduates as a part of their basic preparation was discussed earlier, including the work of such groups as the assistants in Germany. The training required for the higher qualifications of the Royal Colleges and for the M.D. and other higher university degrees in Great Britain has been referred to also. For the purpose of this brief discussion, postgraduate medical education will be limited to the further training of physicians in practice, general and special, and to the preparation for the practice of a specialty.

No governmental program for the continuation training of men in practice exists in any country visited. Most of the universities and hospital clinics are open to visitors but no special effort is made in most of them to provide instruction designed particularly for the practitioners. There is a consensus of opinion everywhere that postgraduate training for practitioners and undergraduate medical education cannot be carried out satisfactorily in the same hospital or laboratories at the same time.

Great Britain

In Great Britain, the Ministry of Health has a plan to establish a postgraduate teaching center with its own facilities and staff to cover all phases of laboratory and clinical instruction. Should the plan be completed, all men engaged in government work may be required to rotate through such an institution and the suggestion has been made that physicians working under the National Health Insurance Act would be encouraged to attend. But this is still only a plan. Recently every teaching hospital in London was asked if it would be willing to discontinue undergraduate medical teaching and convert itself into a postgraduate medical school only. Not one was willing to do so.

The Fellowship of Medicine and Post-Graduate Medical Association of London provides instruction to qualified physicians in

the hospitals of that city. It is affiliated with fifty hospitals containing 6,000 beds and instruction is provided in every field of medicine. Comprehensive tickets for the General Course are issued for periods of one week to one year for a fee ranging from two to twenty guineas. A ticket entitles the holder to attend daily practice in any of the hospitals,—ward rounds, operations and out-patient services.

Twenty-seven of the hospitals offer about 60 Special Courses each year. In the general hospitals, these are primarily refresher courses consisting of two weeks of intensive work in general medicine, surgery or a specialty. In the special hospitals (pediatric, skin, cancer, tuberculosis, mental diseases, orthopedics, etc.), the Special Course is limited to the particular field of the hospital. None of these courses give a degree or special recognition. The Association also collates and publishes the many general and special lecture demonstrations scheduled in the city in all institutions and keeps in touch with the programs of postgraduate training in the other teaching centers in the British Isles. Lectures open to the entire profession are conducted by the Association at regular intervals. Similar organizations exist in other British centers and many demonstrative lectures are given daily in all the large hospitals.

The courses mentioned above are convenient for physicians in the cities but are not for physicians in the smaller cities and in the country who usually cannot afford the time and money to attend. Very little effort has been made yet to provide continuation education for these physicians while they can continue to attend their practices. Nothing like an extension plan of education has been developed.

Germany

In Germany, there is an unofficial plan of continuation training which has been worked out by the medical profession. The present plan originated in Prussia in 1901 with the organization of a central committee for medical postgraduate work for that state. Similar committees were formed in the other German states and in 1908 a central Committee, the *Reichsausschuss für das Ärtzliche Fortbildungswesen,* was organized. The local committees are made up of representatives of the universities, the hospitals, the medical profession and the social medical societies. The commit-

tees receive support from the state on the ground that the continued education of practitioners will benefit the health of the entire community. The committees only outline the courses, fix rules and make the local arrangements for teaching. There are eighty teaching centers under the general supervision of the central committee.

The function of the committees is to arrange courses in teaching centers to which physicians may go without sacrifice of time and money. It is the aim to have these courses reach the largest possible number of physicians and the development of the teaching centers is governed largely by this consideration. The courses are always free and arranged at the time of the year and at hours of the day which are most convenient for the doctors. The plan is one of decentralized instruction. The universities and large hospitals are used, where they are convenient. In rural districts traveling physicians supplement the work, going to groups of physicians. The courses are usually in the evenings. Some are given at the noon hour, some on Sundays. The teachers receive no compensation. The clinical instruction in the hospitals,—university and non-university,—is supplemented by radio talks at regular times, to which physicians often listen in groups, and by a journal (*Zeitschrift für Ärtzliche Forbildung*) supported by the central committee, which is devoted exclusively to the post-graduate education of practitioners. The courses are all designed for the general practitioners.

The central committee is housed in the Kaiserin Friedrich-Haus where there are excellent library facilities, a lecture hall, a museum, an historical collection and a state collection of equipment loaned for medical instruction, professional and lay. In this building is also housed the German Committee for the Hygienic Education of the Public, supported by the state and concerned with all forms of publicity for health.

France

Most of the regular clinics, lectures and demonstrations in the French hospitals are open to qualified practitioners and a large number of doctors attend the lectures in some of the well known clinics. There is no organized effort, however, to keep the main body of the profession informed on current methods of diagnosis and treatment.

The Netherlands

A Committee on Post-Graduate Medical Courses is working on the problem in the Netherlands. A proposal was made by a preceding committee that every physician should be obliged to spend two months in a clinic at least once in ten years. This proposal has been rejected, however, because of the economic factors involved by physicians being compelled to leave their practices. Out of the discussions has come the organization of courses for practitioners, clinical evening lecture courses and permission for a limited number of visitors at regular hospital work.

THE SPECIALTIES

In the foregoing discussion, there is no reference to training requirements for the various clinical specialties. In all countries, opportunities widely different in character are provided for the training in special fields. There is a general belief that specialists should receive a definite training for their limited field of practice. Many hospitals in England, for example, are coming to require the F.R.C.S., Eng., for surgical appointments and common practice in all the countries tends to insist on special preparation, but in none of the countries mentioned are there specific regulations governing the matter. Denmark has taken up this problem and it will be well to present the plan in some detail.*

Denmark

At the annual meeting of the Danish Medical Association, a specialists committee is elected which consists of:

1. A member of the faculty,
2. A practicing specialist,
3. A chief physician of a hospital,
4. A practicing physician in Copenhagen,
5. A practicing physician from the country,
6. A representative of the Association of Younger Physicians.

Each member serves for three years. The Committee works out the course of training for each specialty in consultation with the association of specialists in each field, where such exists.

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* Translated from the Yearbook of the Danish Medical Association, 1929.

Any member of the Danish Medical Association may apply for recognition as a specialist. His application goes before the committee which appoints two recognized specialists in that field as consultants but without vote. The committee deliberates on the application and either accepts or rejects the request. If the applicant is rejected, the reasons must be given. A rejected applicant may appeal to the supreme board of the Danish Medical Association within 14 days after rejection. This board may, if it sees fit, overrule the committee by a two-thirds vote.

The committee makes and keeps a list of the recognized specialists which is published annually. No member of the medical association may advertise as a specialist without recognition as such. Recognized specialists may advertise their specialty within the rules and regulations governing advertising. A specialist may do general practice but he may not have an insurance (*Sygekasser*) or municipal practice without consent of the local medical association which, when given, is good for only three years. If a physician refers a patient to a specialist he receives a report from the specialist. The specialist may not take over the general treatment of the patient, his family or his servants within two years without informing the physician who referred the patient.

The basic requirements of all the specialties are that the applicant must have:

1. Graduated at least six years previously,
2. Had the recognized intern service of one year (6 months in medicine and 6 months in surgery),
3. Had at least two years' training in practical work as a physician outside of his special field.

Each of the specialties has its own specific requirements in addition to the basic preparation given above. The requirement for surgery is:

1. Three years assistant in a surgical department, or
2. Three years as an assistant in a department chiefly for surgery plus one year as an assistant in a surgical department.

That for pediatrics is:

1. Six months' internship in pediatrics, plus
2. Two years as assistant in pediatric department, or
   One year as assistant in pediatric department plus one year as laboratory assistant, plus
3. Training in contagious, skin and venereal diseases.

That for obstetrics is:

1. Two years in an obstetrical department, one of which must be as an assistant, plus
2. Six months in a department of gynecology, plus
3. Three months in a department of venereal diseases.

Orthopedics:

1. Two years as assistant in an orthopedic department, plus
2. One year as assistant in a surgical department, or
   Two years as assistant in a mixed medical and surgical department, plus
3. Three months on a neurological service, or
   Six months in a neurological policlinic.

Otolaryngology:

1. One year in a surgical department, plus
2. Three years in an otolaryngology department as intern or assistant.

Similar requirements are made for medicine, tuberculosis, psychiatry, neurology, gynecology, ophthalmology, dermatovenerology, physical therapy and radiology.

A similar plan for the specialties is said to exist in Norway (that country was not visited).

Foreign Students

Foreign students are accepted in many of the courses given in Great Britain, Germany and the other European countries and each year many American physicians go abroad to visit and work at the various clinics in Switzerland, Italy, France, Scotland, Germany and elsewhere. The largest group of Americans studying abroad is in Vienna where all instruction for Americans is given in English. The group there has been organized since 1903 as the American Medical Association of Vienna and this association arranges for most of the graduate medical work for American physicians there, although courses can be arranged for privately.

About 800 American physicians take more than 3,000 courses in Vienna each year. There is a minimum of 300 in attendance at all times. From October, 1927 to March, 1929, 879 new members were added to the American Medical Association of Vienna. During that time, the Association arranged 3,961 courses covering 27,000 teaching hours. Most of the instruction is in the surgical specialties and special fields of instrumentation. The clinical and

post-mortem material is unexcelled and the doctors are allowed access to it as they are nowhere in America. Very little distinction is or can be made between those who have been doing good surgery in America or are adequately prepared for the clinical work in Vienna and those who are not prepared. All are given liberal opportunity to attend, assist and actually participate in the work of the clinic. The fees are a large element in the support of the doctors on the faculty at Vienna. The usual charge is $5.00 per hour of which $3.60 goes to the instructor.

MEDICAL PRACTICE AND SICKNESS INSURANCE

IT was felt that an inquiry into the general aspects of medical practice in European countries as they provided or affected opportunities for the recent graduate should be made. An exhaustive study was not contemplated for the subject is too large to be treated in a brief visit and the literature on the topic is voluminous.

Although there are differences in the length, content and methods of medical education in the different countries visited, there is general agreement now that preparation for practice should be founded on an adequate preparation in the sciences and that the clinical experience and examinations should include all the major divisions of medicine. Until the acceptance of that conception, however, various types of doctors were recognized whose training and practice were limited in character. Surgery, obstetrics, medicine alone and other single fields of practice were cultivated separately and a training limited to the single field was provided. There were two classes of surgeons in Germany, for example, one which had received a four year university education and one which received an apprenticeship training. In 1852, regulations established a single grade of physician in that country and the examinations for licensure included all branches of medicine. A similar provision was intended in the Medical Act of 1858 in Great Britain.

Training of Rural Physicians

Another group of physicians once recognized in several countries is of interest because of the suggestions put forth recently in America to help overcome the shortage of physicians in the rural districts.* Doctors for the country (*Wundärzte*) were required in Austria to have only a two years training but the course was extended to three years in 1810. The abolition of the substandard practitioner was proposed in 1848 but it was felt that the existing medical schools at Vienna and Prague could not produce enough properly trained physicians for the whole country. Because of

* Discussed in Preliminary and Second Reports of Commission on Medical Education.

that, the faculties at Graz and Innsbruck were founded and finally, in 1872, recognition of the training for the inferior grades of practitioners was discontinued.

A similar recognition of an inferior grade of practitioner resulted from the Apothecaries' Act of 1815 in Great Britain. This was corrected by the Medical Acts of 1858 and 1886. In the Netherlands, the doctor who had obtained the special license for country practice under the course supervised by the state was obliged to confine his practice to rural communities. The sub-standard training was discontinued in 1860.

Quackery

In addition to the recognition of multiple standards of training for medical practice, cults of various kinds have flourished from the earliest period to the present. The number of non-medical quacks and cultists in the different countries is hard to estimate but it is claimed that in Germany they represent about one-fourth (in some places evidently a higher proportion) of those who treat the sick. There is no protection of medical practice in Germany or Great Britain, as mentioned earlier, although the state officially recognizes only qualified practitioners for signing death certificates, for medicolegal testimony and the privilege of recovering fees by suit at law. The amount of practice by irregulars is large and is growing rapidly in Germany particularly. It affects seriously the economic wellbeing of trained and conscientious physicians. The theory that quackery is due to a lack of doctors or is related to high standards of professional education is untenable, but the fact that its growth seriously impairs the efficiency of the trained medical profession and is a public menace is quite clear. The growth of quackery is traceable to thoughtless and unwise legislation which fails to recognize the basic need for an adequate scientific education for sound medical practice.

Ratio of Physicians to Population

In most countries in Europe, except Sweden, the claim is made that the medical profession is overcrowded. The return of many physicians to Austria and Germany from the territory and colonies lost in the recent war has accentuated the situation in those countries. In the Appendix is a table showing the number of physicians

per 100,000 population in representative countries of the world. The approximate number of persons per physician in several European countries visited may be cited:*

Switzerland	1,250
Denmark	1,430
England and Wales	1,490
Germany	1,560
France	1,690
Netherlands	1,820
Sweden	2,860

The proportion of physicians that limit their work to a single field evidently varies considerably. Exact data are as difficult to obtain in Europe as in America for many specialists do a certain amount of practice in fields that are closely allied to their own. In Denmark, where specialism is most closely supervised, 27% of the physicians are listed as specialists. An official of the German Medical Association stated that 28% of physicians in his country were specialists. In the previous chapters, reference has been made to the opportunities for training for the specialties and to the matter of higher degrees and qualifications for hospital and other appointments.

SICKNESS INSURANCE

National sickness insurance has a very important influence on medical practice. The plans in the different countries vary considerably but all aim to provide a method of distributing the economic load of medical care over a large fraction of the population. In general, the schemes are financed by a combination of contributions from the insured persons and employers, compulsory savings and indirect taxation. A point which needs great emphasis is that the aspects of medical care are only a part of a much larger scheme of insurance against incapacity, disablement, unemployment, old age and other economic risks. The present plans of insurance are an evolution from previous schemes to provide the protection contemplated now by the various national programs.

Object of Insurance

The main object of social insurance in the early days of its use was to provide cash benefits to persons incapable of working. The money was intended to replace wages lost because of illness. The

* United States, approximately 800.

object was to compensate rather than to provide treatment. Gradually this idea was replaced by emphasis upon the importance of medical treatment, until the present aim to secure a cure of the illness or disability which will permit the individual to return to work was developed. The change in point of view is well illustrated by the shift from "cash benefits" to "benefits in kind" which has become the basis of compulsory sickness insurance everywhere except in the Irish Free State. Benefits in kind include medical treatment and drugs in all instances and certain optional additional benefits such as hospital, dental, ophthalmic and sanatorium treatment in some countries.

Restoration rather than compensation is the principal function of present day insurance. There is a distinct trend now to place sickness insurance on a family basis. Several methods of grouping the insured are in use. The trade grouping was the earliest method and is still in use. It may be national or local and usually is a part of the trade union or guild organization. The second common method is by territorial grouping in which all insured persons in a given area regardless of their occupation are considered as the unit. There are several other less important methods.

Compulsory sickness insurance laws, as a rule, are based ordinarily on the contract of employment and they are intended primarily for wage earners who become the employed contributors. Others may, under certain conditions, become voluntary contributors. Of 23 countries which have compulsory sickness insurance, 20 restrict the plan to wage earners.

The idea of making collective protection against sickness compulsory and applying it to all persons mainly dependent upon labor was first formulated at the French Convention of 1794. The first practical effort to apply the principle was embodied in the German Act of June 16, 1883. At present, twenty-three countries have compulsory insurance,* three of which include the entire population (Chile, Portugal and six cantons in Switzerland).

SICKNESS INSURANCE IN GREAT BRITAIN

The present plan in Great Britain has evolved from earlier forms of contract practice. It had long been recognized that many persons in the agricultural as well as the industrial areas were not able to pay for medical attendance on the basis of private fees. For many such persons and families, physicians agreed to provide

* See Appendix.

that attendance on one or another basis of contract practice. Those who came under the provisions of the Poor Law system were excluded, of course. Local arrangements of widely different character were made.

Many doctors had their own private clubs, collecting from their members a small weekly contribution in return for which the entire family was attended. Usually these contributions were about 3d. a week. Many physicians arranged with the management of factories and other local industries to provide medical attendance for their employees. Deductions were made from the wages of such employees and turned over to the doctors. These contributions usually covered medical care for the entire family. Philanthropic agencies organized Provident Dispensaries which were started by contributions from members of such philanthropic agencies, and physicians on the staffs of the dispensaries were paid a small amount to attend persons in their homes when it was necessary. Medical clubs were organized by churches and other lay groups. The most widespread contract practice, however, was with the Friendly Societies and the Trade Unions. These bodies usually had branches throughout the country and provided a number of benefits to their membership, including unemployment, sickness and funeral benefits, and later they provided medical attendance. Each local branch or lodge appointed its own doctor and paid him varying sums from 2s. 6d. to 5s. per member per year and for this sum the doctor provided ordinary medical care and medicines to each member.

Practically all of these methods were based on the idea of helping persons who were considered to be unable to pay for proper medical attention and as a result the remuneration was low. The doctors were inclined in many instances to give superficial and perfunctory services. Many persons who were able to pay somewhat more than the contributions took advantage of these various types of contract practice to obtain cheap medical care. Many abuses grew out of the system. Physicians not infrequently accepted more appointments to local clubs than they could take care of, not so much to increase their incomes but to keep competitors out of the community. Canvassing and other forms of questionable procedures were resorted to and the whole situation became very unsatisfactory for everyone concerned.

The reports of the Royal Commission on the Poor Law appeared in 1900. The majority and the minority reports agreed that the then existing provisions for medical attendance for the working

classes were unsatisfactory. The majority report recommended that it be reorganized on an insurance basis. The minority report recommended that the medical services be municipalized, that doctors be placed on salaries for the care of this group of the population and that they be paid out of rates. Out of the discussion was developed the National Health Insurance Act of 1911 which went into effect in January, 1913, which made insurance compulsory for all workers whose wages did not reach £160 a year. The present income limit is £250 per year.

The National Health Insurance Act

At present the National Health Insurance Act provides that, with certain exceptions, all employed persons between the ages of 16 and 70 years shall be insured for both health insurance and contributory pensions. Contributions are made at the rate of 9d. a week for men and 8½d. a week for women (the employer contributes one-half). The whole contribution is payable by the employer through the purchase of stamps provided by the government, which collects the money. Although there is a single collection of money for the various features of the insurance scheme, the distribution of benefits is divided. Medical benefits (*i.e.*, the fees for doctors) are distributed through the regional medical offices and cash benefits of all kinds paid to the insured are disbursed through the Approved Societies. At present the insured population represents:

35% of the total population,
78% of the occupied population,
86% of the employed population,
92% of the employed population of insurable age.

Insured persons are entitled to a number of benefits:

1. Medical benefit (medical attendance and treatment.)
2. Sickness benefit (weekly cash payments during first 26 weeks beginning from the 4th day of incapacity).
3. Disablement benefit (reduced cash payments during incapacity extending beyond 26 weeks).
4. Maternity benefit.
5. Additional benefits (ophthalmic treatment and optical appliances, convalescent homes, nursing, surgical appliances).

Medical benefit consists of a general practitioner service (not the services of specialists) for the insured person only, not his or

her family. The children of school age receive a certain amount of general medical care from school physicians. Maternity benefit consists of a payment of 40s. on the confinement of the wife of an insured man. If both the man and wife are insured, the maternity benefit is doubled. A woman who has received a maternity benefit is not entitled to a sickness or disablement benefit for a period of four weeks following her confinement. Sickness, disablement or maternity benefits are not payable to any person who is a patient in a hospital supported by charity, by voluntary contributions or by public funds. Sickness or disablement benefit is not payable for accidents or industrial diseases covered by the Workmen's Compensation Act. Various other regulations of this general kind are in force. An Approved Society which has a surplus may provide additional benefits to its members. These additional benefits may take the form of increases in the rates of sickness, disablement or maternity benefits, the purchase of appliances, nursing services, the provision of special forms of treatment such as dental, ophthalmic, orthopedic, etc. or the payments for hospital or convalescent home treatment. The Act of 1924 permits medical attendance for the family of the insured person at the option of the Approved Societies, but the Societies have not taken advantage of the authorization because of the difficulties of organizing the medical services for such a program.

Organization

The National Health Insurance Act created about 200 Insurance Committees in England, Scotland and Wales to administer the medical benefits and to look after certain features of local administration. These Committees are made up of representatives of the local County Council, the insured persons (a majority), the Ministry of Health and the panel physicians. These Committees distribute the money sent to them by the Ministry of Health to the doctors in their areas in accordance with the number of persons on the list of each panel physician. The insurance collections are pooled for the entire country and the pool is divided according to districts on the basis of the number of insured persons in each district. The amount assigned to each district divided by the total number of insured persons in the area sets the capitation fee, which has varied from time to time. The present capitation fee is 9s. per insured person per year.

Each Insurance Committee is obliged to have a Medical Service

Sub-committee made up of an equal number of doctors and insured persons to which are referred all complaints by patients against doctors and by doctors against patients.

The local medical practitioners have a Medical Committee called the Panel Committee which represents the interests of the insurance practitioners in each area. This committee investigates all matters of a professional character. One of the functions of the Panel Committee, for example, is to investigate all complaints regarding alleged excessive prescribing. It is not a popular duty for the Committee because they are obliged to check up on all physicians who are prescribing more than the average amount or are prescribing unnecessarily expensive drugs. A doctor who is found to be at fault in this matter and persists after a warning is likely to have his compensation under the Insurance Act reduced by an amount sufficient to cover what the Panel Committee estimates to be the excessive amount of prescribing. The practitioner in return has the right of appeal to the Ministry but this problem of prescribing illustrates very well the administrative machinery that must be set up to take care of the details of medical service which have led to many of the criticisms of insurance practice.

Another committee is known as the Allocation Committee. It is composed of an equal number of persons appointed by the Insurance Committee and by the Panel Committee. The duties of this body are to see that all insured persons get the medical benefit to which they are entitled. There are many insured persons who will not choose a doctor or who are strangers in a district and this committee attempts to allocate such persons to a doctor. Another function of the committee is the allocation of persons on the list of a deceased or retired physician.

Every doctor on the Medical Register has a right to be on the list of doctors for the insurance area in which he practices. He can be removed from the list at his own request or may be forced off by an inquiry. The agreement of the doctor is to give such services "as can properly be undertaken by general practitioners of ordinary competence and skill." The Act made no provision for consultant and specialist services. It was felt at the time the Act was passed that the country could not afford to provide a complete medical service but that a beginning should be made, that the basis of the medical service should be domiciliary attendance and that the rest of the service could be added in the future. The Act did not contemplate a complete medical service for anyone.

Financial Features

For the distribution of purely financial benefits such as those for sickness, disablement and maternity benefits, the government decided to utilize the then existing organizations, of which there were a considerable number and variety. The most important of these were the mutual benefit organizations known as Friendly Societies, the Collecting Societies affiliated with insurance companies, the Trade Unions, the Provident Societies and various Assurance Societies. Those that the government accepted for its purposes were designated Approved Societies, the number of which were:

Year	*Number of Approved Societies*	*Number of Branches*	*Total Sickness Insurance Institutions*
1912	2,481	14,388	16,869
1922	1,161	7,266	8,427

The Ministry of Health has promulgated regulations to govern such matters as the choice of a doctor, the times at which he can be changed, the hours at which a doctor may be seen, the method by which the patient gets medicines, the way in which doctors are compensated, the rules governing the relationship of patients and physicians, the complaints against doctors or by doctors against patients, the manner of removing physicians from the Panel list, etc. These regulations have become very numerous and have become a source of considerable confusion and annoyance at times.

Results

As the insurance plan has worked out, it has greatly increased the work of the doctor, particularly with trifling illnesses which, however, has allowed him to see many cases soon after the onset of disease. One of his most important functions is to spot those patients who are in need of specialist or hospital care and to arrange that they get it, a sorting process. Patients now go to him for complaints which formerly were left untreated or were treated by the patients themselves or by a chemist. The amount of clerical work has been increasing steadily. The insured persons require certificates of various kinds, records must be kept and many communications forwarded to various governmental and other agencies.

The income of the profession has undoubtedly been increased by the insurance plan. It is doubtful if the system has actually diminished the income of a single doctor inasmuch as the capita-

tion fee is several times larger than the amounts paid under previous systems of contract practice. The present insurance plan provides medical care and other benefits for approximately the same elements in the population that were covered by the miscellaneous organizations in the past. Raising the capitation fee above the club fees of the former period has also had a tendency to increase private fees. Furthermore, doctors are now paid for mileage in the rural districts which was not covered under the previous plans. Many physicians who do not do insurance work are getting better fees now because the Insurance Act has tended to raise all medical remuneration.

One interesting feature of panel practice is the sale and purchase of practices. The panel list of a physician is an asset of some value for he may sell his list to another physician at any time. The usual sale price is from 9s. to 13s. per person on the list. The entire list is transferable to another physician who may thus get a prompt start in practice.

The capitation fee includes medical attendance within two miles of the doctor's residence or surgery. Any attendance beyond this radius is paid for out of a special Central Mileage Fund. It is designed particularly to assist the country practitioners who are at a great disadvantage as compared with the physicians in the city. The panel lists in the country are small and rural practitioners insisted that they should be paid for the time they spent in making calls on patients who resided beyond the two mile limit as well as to cover actual expenses incurred in traveling. This is now the plan in operation.

Operation of Insurance Plan

When the National Health Insurance Act was first put into operation, the number of persons on a given panel was not limited. It was later set at 3,000 persons (not patients) and more recently has been reduced to a maximum of 2,500 persons per panel. The average number of persons on a panel is just below 1,000 per doctor on the basis of approximately 16,000,000 insured persons and 15,000 panel physicians. It has been found that the number of attendances are now averaging about 5 per insured person (not per patient). On the basis of a capitation fee of 9s., the average fee per visit is about 2s.

A study which was made a few years ago showed that the work arising out of the care of 1,000 insured persons would acquire about 14 visits per day on the basis of 300 working days in the

year. Of these visits about 4 were in the home and about 10 in the surgery. If a doctor has 2,500 persons on his panel, his daily work is likely to average about 40 visits per day for insured patients only, of which more than three-fourths would be in the surgery. On a visit to one of the large panel practices in London in which four men were taking care of about 9,500 insured persons, one doctor saw 84 patients in about three hours. Most of the patients came in to secure certificates and the renewal of prescriptions. A few were given appointments to return later for physical examination.

Patients are permitted now to change their physician at any time. Originally they were permitted to change twice a year. If a patient transfers from one doctor to another his name remains on the list of the first doctor until the end of the quarter, when new lists are made up. It may happen, therefore, that a physician is treating an insured person without getting compensation for it but that situation averages out and corrects itself each quarter.

An interesting situation also arises in that group of patients who obtain their medical attendance at the dispensaries of the various voluntary hospitals. Between 50% and 60% of the patients seen at several of the hospitals visited in London are insured persons who come to the hospital for the services of a specialist or to be examined, which many panel physicians do not do. The out-patient services do not charge for these examinations or specialist services. The Poor Law hospitals which are maintained out of local rates do not provide out-patient services ordinarily, on the ground that the National Health Insurance Act is intended to cover a large part of the services rendered by an out-patient department. The large number of out-patient visits to the voluntary hospitals of London, referred to elsewhere, suggests a considerable amount of service rendered by these out-patient departments to individuals for whose care the National Health Insurance Act has already made provision.

The Act of 1911 provided that 1d. for each insured person should be retained for the purpose of research. A group of commissioners was appointed to administer this research fund. Out of this early work has developed the Medical Research Council which now, however, has no direct connection with national sickness insurance or with the Ministry of Health but is set up under the Privy Council.

Increasing attention is being paid to the preventive aspects of the insurance plan, particularly since under the capitation fee basis

it is to the interest of the doctor to have as little illness as possible among the persons on his list. By encouraging the treatment of minor complaints which might develop into more serious disorders the insurance plan operates to increase the amount of preventive work. Very little in the way of periodic medical examinations or advisory health work for families has been developed, however.

Attitude of Profession

Although there has been a great deal of opposition in the medical profession to the insurance scheme and many physicians who are not working in it or who have not served under the previous forms of contract practice maintain that the plan is bad, there seems to be an overwhelming majority of the insurance physicians who are in favor of the present plan. An official of the British Medical Association said in one of his publications, "I can confidently say that not one doctor in one thousand who is doing national health insurance work would willingly go back to the old system if the choice were put to him as a practical proposition to which he must give an answer." This attitude still prevails. There is no doubt that government control and supervision has greatly restricted the liberty of the individual doctor, curtailed his freedom to a certain extent and placed many responsibilities on him for records, reporting, certification, etc. On the other hand, he now receives a remuneration of approximately three times what it was for the care of the same patients before the Act went into effect. Persons covered by insurance now obtain a medical service which many of them did not have previously, for those who were in Friendly Societies or other forms of lodge practice in the past now secure a better type of service.

On the whole, there seems to be agreement that the National Health Insurance in Great Britain as it now stands has been advantageous to both the profession and the public. The profession is remunerated for the care of many persons who in pre-insurance days did not pay at all or paid very inadequately. Many features of unwise professional competition to get contract practices have been eliminated. The Friendly Societies were difficult bodies with which to deal professionally. It is true that some of the old individualism and freedom of the profession has disappeared under the regulations which the government has set up, particularly for those doing less competent work. Doctors have been called upon to keep many records, make reports and subscribe to certificates which are part of the red tape of government

machinery. There is a growing tendency of the government to further elaborate regulations which, however, is only a common experience with governmental agencies. It is probably true that insured persons in England have more protection against inefficiency and carelessness on the part of the doctor than do private patients. An insured person can not only change his doctor but has the right to bring complaints against a doctor before an insurance tribunal where, if the doctor is found guilty, different degrees of punishment can be dealt out. The doctor also has recourse to the tribunal for the lodging of complaints against patients but this is not an easy thing to carry out. No effectual punishment has been devised for persons who make unsupported and untrue charges against insurance doctors.

The Highlands and Islands Service

Under the National Insurance Act of 1911, insured persons acquired a statutory right to certain benefits, including medical attendance and treatment. The implication of that Act was that adequate medical provision would be made available to the beneficiaries throughout the country. Conditions in the sparsely settled areas of Scotland, for example, are such that the assumption in the Act of 1911 could not be realized under the usual plan of medical practice. A study of the situation in that section was made and Parliament made a special Imperial Grant and created the Highlands and Islands (Medical Service) Fund under the Grant Act of 1913 which was to be used in subsidizing medical and nursing services in those areas of Scotland.

The area to which the Act extended this financial aid was defined in the Act itself and included slightly more than one-half of the land area of Scotland and about seven per cent of the population. The schemes approved in accordance with the legislation included:

1. General medical service,
2. Nursing service,
3. Hospitals and ambulance services,
4. Specialized services, (dentistry, medical consultants, surgical assistants, laboratory facilities, etc.),
5. Improvement of living quarters for doctors and nurses,
6. Telegraph and telephone extensions,
7. Treatment of tuberculosis,
8. Special emergencies.

Subsidies are paid to doctors from the Fund for rendering medical services at low fees to the families and dependents of insured persons and certain specified uninsured persons. Each doctor is guaranteed £500 per year and treated persons are asked to pay what they can up to one-half a guinea per visit. Most of the charges, of course, are very small. The latest report shows that 156 physicians and 174 nurses are operating under this Fund. Last year when one position was open no less than sixty applicants applied for the post. It is the plan that postgraduate work for doctors in this area will be developed partly in connection with the work of the Ministry of Health. That Ministry has gradually combined the duties of the medical officers of the region with that of the doctors under the Highlands and Islands Fund which has increased the usefulness and value of these doctors both to the insurance scheme and to the public health work. The general plan has made medical services available to the entire population of such districts.

The Consultative Council on Medical and Allied Services of the Scottish Board of Health, in its report of 1920 on a scheme of medical service for Scotland, expressed itself as satisfied that the time had arrived for formulating a general plan whereby the entire health service of the nation should be established on a broad and comprehensive basis with the object of linking up all the various agencies concerned, to the end that a complete and adequate medical service should be brought within reach of every member of the community. It was not the idea that such service should be provided for entirely at the public expense or that it should be furnished to all by a body of state or civic practitioners. It was the feeling, however, that the state should assume the duty of organizing and supplementing existing arrangements so as to insure that to every person all necessary medical advice and treatment should be readily accessible.

The Council expressed the opinion that it is of "primary importance that the organization of the health service of the nation should be based upon the family as a normal unit and the family doctor as a normal medical attendant and guardian. It is not for diseases in the abstract that provision has to be made, but for persons liable to or suffering from disease. The first essential for proper and efficient treatment of individual persons is therefore not institutional but personal service." It laid particular stress on the principle of insuring that the service of a family doctor should be accessible to each family and that the "continuous safe-

guarding of the family health rather than the occasional treatment of individual illnesses should be the primary interest of all concerned—the doctor, the head of the family and the community." All the suggestions made in this report were directed to the promotion of the efficiency of the family doctor, in a large part by supplementing his efforts through hospitals, nursing, convalescent homes, etc., to insure a complete family medical service.

Present Trend of Insurance

Looking into the future it is clear that there is a desire to extend the present insurance plan to include all members of the family and to provide a complete medical service, including not only the general practitioners but specialists, nursing, hospitalization and other forms of institutional care. Another desire is to establish a lower limit on the number of patients on each panel, to which the medical profession agrees providing the doctors receive an increase in the amount of payment per person so they may be able to devote more time to each patient and to render a better service.

The medical profession is anxious to secure an even larger voice in the administration of the Insurance Committees and other machinery associated with National Health Insurance, partly to remove some of the restrictions placed on the medical profession who are working under the present system. As it is now, physicians are obliged to report on many minor arrangements of their practice, such as vacations, and the Insurance Committee is empowered to make inquiries into the accommodations doctors provide for their patients and other features of this kind to which some of the medical profession object.

The inclusion of the families of insured persons under the present income bracket would probably bring the number of insured persons to more than one-half the population. At the present time the panel physicians receive an average of about £400 a year for the care of the families of persons covered by insurance. This is approximately the same amount received for the care of the insured members of those families (1,000 persons on average panel and a capitation fee of 9s. per year). The medical profession is fearful that an increase in the insurance plan to include the families will represent a reduction in the income of the physicians.

There is also a growing sentiment in Great Britain to develop a plan of insurance for persons of moderate means, *i.e.* to devise an insurance plan for those with incomes of more than £250. There

is also considerable sentiment in favor of state salaried medical services for the country.

The cost of the various social services in Great Britain has grown to major proportions. The National Health Insurance appropriation is about £39,000,000, made up of contributions from:

Employers	£14,000,000
Employed persons	13,000,000
State	7,000,000
Interest on Funds	5,000,000

In addition, there are the other insurance plans:

Widows' Contributory Pensions	£11,000,000
Orphans' " "	11,000,000
Old Age " "	4,000,000
Unemployment Insurance	50,000,000
Total	£115,000,000

Expenditures on services other than those on an insurance basis such as non-contributory Old Age Pensions (£27,000,000) have increased the total to large figures. The cost of social services described as insurance is now almost $800,000,000 per year to which the beneficiaries contribute about $130,000,000, the employers about $150,000,000 and the balance is made up from taxes. The total cost of all social services, including education, is now about six times the expenditures in 1910-11.

Voluntary Insurance

In addition to those who are insured under compulsory insurance, a small proportion of the population who had been in insurable employment but who have ceased to be so are insured voluntarily for medical benefits. A considerable number who are compulsorily insured also carry voluntary insurance through various societies for supplementary sickness and other cash benefits. The total number of persons voluntarily insured for these additional benefits is about 13% of the population. A very large majority of these persons are insured for the non-medical benefits through sickness, unemployment, deposit, dividing, juvenile, shop, collecting and similar societies.

A new form of insurance plan has been started in Great Britain. The Public Medical Service Association aims to establish a service for every member of the community irrespective of income. It

is proposed that a complete medical, dental, obstetric and surgical service be organized under the Ministry of Health. The proposal has been presented to the House of Commons but no action has been taken yet.

SICKNESS INSURANCE IN GERMANY

Germany was the first country to institute compulsory sickness insurance (1883) and the original plans have been greatly elaborated and revised. Sickness insurance at present is limited ordinarily to those receiving wages as a worker, including salaried personnel and domestic employees. The maximum annual income for the purposes of insurance is 3,600 marks. The employer contributes one-third and the insured person two-thirds (7-8% of wages). Contributions are suspended during the period of incapacity from illness.

When compulsory insurance was introduced, Funds were created in accordance with the Insurance Code as there were very few mutual benefit associations or trade union insurance schemes which could be taken over. The number of Funds in Germany now is about 7,500, scattered over the country. There are 60 in Munich and about 280 in Berlin. 71% of insured persons belong to Territorial Funds (local and rural), 24% to Trade Funds and only 5% to Mutual Aid Societies. The inclusion of the dependents of insured persons is optional in Germany as elsewhere, but 95% of local funds have introduced family medical care, in contrast with Great Britain, and 99% of the dependents of insured persons in the local funds are eligible for medical benefits now. Almost all the funds grant this service gratuitously and a large majority of them also provide hospital treatment and drugs.

Those whose annual incomes do not exceed 3,600 marks who have given up insurable employment or who are outside the scope of compulsory insurance (persons engaged in industry who do not employ more than two insurable persons, persons who work for remuneration in the course of their scientific training and persons engaged in nursing and education) may insure voluntarily as voluntary contributors. The voluntarily insured represent about 3% of the population.

At present those compulsorily insured are:

32% of the population,
63% of the occupied population,
77% of the employed population.

Medical benefits for dependents are additional but are granted by nearly all insurance organizations. Over 60% of the population receive medical benefits, the proportion in some of the large cities is estimated at about 90%.

This general situation has a very important influence on medical practice. Only 5% of physicians in Germany are doing private practice alone, 15% are in salaried positions of various kinds (government, administrative positions, universities, etc.) and 80% receive their income from the *krankenkassen* (between 38,000 and 39,000 of the 47,000 physicians in Germany). Any physician receiving a salary of 500 marks a month is not permitted to do insurance practice, a factor of great importance to younger university men and one which forces many of them out of the universities.

The *krankenkassen* limit the number of insured persons to 1,000 per physician in each insurance district (1,350 per physician including the family). The Verband der Ärzte Deutschlands rents places for young physicians on the *krankenkassen* lists from the older men who have an insurance practice, a source of revenue for the latter and the possibility of at least a meagre livelihood for the former. No physician can rent his insurance list directly. The medical association must make the arrangements.

It is estimated that there are about 4,000 insurance physicians in Berlin and some of the insurance officials believe that medical attention can be provided to their insured groups by about 2,000 to 2,500 physicians. There is a definite desire on the part of the insurance companies to reduce the numbers of physicians on insurance practice and ultimately to establish the medical services on a salaried basis. There are about 4,000 recent medical graduates waiting to get on the insurance lists. It takes about five years to secure an insurance practice now (the only thing open to most recent graduates). This period is one of great hardship for the young physician.

Conflict of Insurance Companies with Medical Profession

The insurance companies are interested in providing medical and other benefits at as low a figure as possible and are endeavoring constantly to lower the remuneration of the physicians. The situation reached a crisis in 1923 when the insurance physicians refused the terms offered by the companies. The latter opened clinics of their own and staffed them with salaried physicians. In 1927, more than thirty such clinics were in operation in Berlin

and provided care for about 750,000 persons, which required almost 300,000 home visits. This plan has been discontinued because of an official ruling, but the clinics are now devoted to the care of families of the insured,—the insured persons receive medical care from individual insurance physicians. The clinics are crowded, the examinations are likely to be hurried, there is very little privacy and no time to make thoughtful inquiry into the problem of the patient. These are the usual defects of overorganization and pressure to provide a nominal medical service at low cost. Conditions of insurance practice in the offices of physicians are much the same.

The sickness disablement and other benefits require certification by an insurance physician and a large part of insurance practice is made up of certification and the renewal of prescriptions. The physician must satisfy his patients on these matters if he is to retain his practice. Even an elastic conscience is often stretched under such circumstances. Overprescribing is a large problem, not alone for drugs but for all kinds of physical therapy* and extras, as well as for hospitalization. Disputes are arising constantly and the insurance companies employ "control" and "confidential" physicians to check the insurance doctors. Any doctor whose care of a given case exceeds an average cost is notified and the patient is usually examined by a "control" physician to curtail unnecessary expenses. This type of standardization is being extended to the amount of lost time, length of convalescence, etc.

In the Appendix are given a few figures which show the current tendency to increase the cases of sickness, lengthen the period of illness, extend the period of benefit and to increase the rate of benefit for which the doctors are in part responsible under the scheme. Persons who do not want to work or cannot find congenial work go to the physicians for sickness certificates. After 26 weeks, they may have their medical benefit extended to a legal limit. Then they are entitled to cash disablement benefits and, as a final resort, to unemployment benefits. Doctors cannot avoid being a part to the scheme which has a bad moral effect on them no less than on the insured persons. The doctor is becoming more a judge as to fitness to work than a physician to treat and prevent illness. In some places, nearly all insured patients are seen by the insurance physicians in an endeavor to check the increases mentioned, *i.e.* duplicate the visits. In order to check expenses and

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* See Appendix for illustration.

the need of extra services in diagnosis and treatment, it is now necessary in many places for the physician to secure the approval of one of the insurance officials (usually a layman) for any service which the physician cannot render himself,—X-ray work, special laboratory examination, consultation, etc.

Many of the difficulties arise in part from the system of paying doctors. Ordinarily the payment is on a per visit basis, the income of the doctor is increased by multiplying the visits. The usual basis of pay amounts to about one mark an office visit and one to three marks for home visits. The average income of an insurance physician is 6,000 marks although it is estimated that 40% of the insurance doctors do not make more than 1,000 marks a year. In a few places, a capitation basis (18 marks) for each insured person (including family) has been inaugurated.

One effect of the type of medical care actually provided under the German system has been to increase the numbers of non-medical practitioners which is stated to be at least one-fourth the number of physicians in some areas. It is claimed that the rapid growth of these irregulars is due to the unsatisfactory services rendered by the *krankenkassen* doctors.

Effects of Insurance

In the discussion of medical education, mention was made of the increasing burden being placed upon the assistants in the university clinics for referee work in disputes regarding insured persons. That work is threatening to undermine the strongest feature of German medical training,—the development of young clinicians who are the chief contributors to research and teaching.

No university physician can do insurance practice (except referee work) because he receives a salary and also because he does not belong to the medical association with which all contracts of practice are made.

Another effect of the sickness insurance on university activities is on the out-patient teaching. The out-patient services are small in many of the teaching centers because the insurance patients and families are cared for by insurance physicians. There is little demand for out-patient care, even for the specialties, which are also covered by insurance.

Some of the insurance officials are very critical of medical education in Germany because of the failure to turn out students familiar

with the economic and social factors of medical service and with the disorders of social importance, *i.e.* the problems and diseases with which insurance practice is chiefly concerned (the neuroses, gynecological conditions, "rheumatism," "anemia," etc.). The insurance companies are bringing pressure to bear on the medical schools to place more emphasis on teaching for insurance practice,—upon the rating of disabilities, malingering, ability to work, etc. The effort will probably be made to force a change in medical education. The more radical enthusiasts for the insurance idea of medical service would like to bring even the medical schools under their control as they have the medical profession.

Preventive Medicine

The claim is made that the insurance plan fosters and encourages preventive medicine. It does to the extent that it brings patients to doctors early and for minor complaints. But the insurance physicians, being paid only small remuneration, give very little time to the patients and usually do not even examine them. Moreover, many insured persons go to physicians only for certificates of one kind or another. Serious illnesses, if they can be recognized without physical examination or a careful history, are usually sent to a hospital; those that cannot be recognized by superficial inspection go later, possibly as emergency admissions. The insurance companies are, however, interested in preventive medical services. They have built sanatoria and preventoria. They aim to give a complete family medical and nursing service. They are making efforts to establish ambulatoria to which all insured persons should go for social-medical study and where a complete life record of every individual should be kept, a "health passport" not unlike the "inhabitant record" now held by the police departments in most European countries. Many insured persons object, however, to periodical medical examinations and visits to insurance clinics because of the alleged use of the findings by employers in keeping them out of work.

Specialist Services

The services of specialists are provided under the German plan (as contrasted with the British) and these services are on a definite schedule of rates on a contract basis between the insurance companies and the organized medical profession. The fee for an

operation for appendicitis, for example, is 40 marks without regard to the severity of the case and covers all postoperative care. Such a large portion of the population is entitled to insurance benefits that most specialists are largely dependent upon referred work from insurance practitioners. The latter are often reluctant to send patients to specialists for fear of losing the patients. Moreover, the insurance companies endeavor to curtail the amount of specialist services as much as possible. Many patients requiring specialists' services are sent to the hospitals (on approval of an insurance officer) for the care of whom the insurance companies contribute but one mark per day.

The picture of medical practice in Germany at the moment is very unsatisfactory for the doctor. It is not much better for the patient who usually obtains a superficial type of examination and treatment in the ordinary service provided by the insurance physicians.

There is a growing discontent with the whole situation in Germany in regard to the medical work of insurance. But the medical phases are only a part of the comprehensive social scheme and there is little likelihood of fundamental changes being made in the basic principles of social legislation. The whole scheme is one of indirect taxation for the benefit of wage earners in case of illness, disability, invalidity, unemployment, old age and death, to which the wage earner contributes a large portion of the cost.

A reorganization of sickness insurance in Germany is now being advocated. It is proposed that all insurance activities be centralized, that the local, guild and industrial organizations be abolished, that the scope of insurance be extended to all employees (some are now exempt) and that insurance be made compulsory for all persons receiving an income under 6,000 marks. It is proposed also that all persons under treatment shall be under the supervision of the "control" physicians of the *krankenkassen.*

SICKNESS INSURANCE IN DENMARK

Denmark has resorted to a different theory of sickness insurance. In that country, it is elective or voluntary and is a part of the comprehensive plan of social legislation begun in 1892. The Law of Public Assistance makes it obligatory for the public authorities to help citizens in "all the necessities of life" and in case of illness, to provide relief and the care required. This can be done directly

or by help to any agency designed for the purpose. But "in order not to weaken their consciousness toward their own duties" a number of conditions which serve as penalties are attached to the receipt by citizens of aid from the public authorities. These include, as illustrations, "the exclusion of the right to vote, the prohibition of marriage without permission of the authorities, the loss of life annuity for old age if the individual received any help from the public authorities during the last three years preceding his application for this annuity, and the necessity of repaying all expenses incurred by the Public Assistance if in the future the individual can."

Exemptions are made for the mentally deficient, the deaf, blind and dumb, the insane and those with tuberculosis and cancer in the case of needy persons,—they are not subject to the penalties. A citizen, not a member of an insurance fund, who falls ill and is obliged to have aid from public sources becomes a citizen of the second class in consequence of his lack of foresight. To provide against prolonged illness or incapacity and to protect the insurance companies against excessively expensive care of long illness, for example, the state assumes the burden beyond 26 weeks in any one year. On recovery, the individual returns to good standing in his insurance fund.

Insurance against incapacity to work is an obligatory supplement to elective health insurance. Only members of a health insurance company authorized by the government are allowed to benefit from invalidity and old age insurance. In this way an individual is able to obtain a pension for a moderate premium (a pension of 540 crowns, according to ruling of October, 1929).

The state contributes to the insurance companies and, in addition, the insurance companies also receive a large reduction in bills for insured persons for hospitalization (a reduction of 50% in hospital bills in a general or mental disease hospital and 75% in an institution for tuberculosis) which means lower rates of insurance for the individual.

While the plan is "voluntary," the severity and number of penalties form indirect compulsion. The aim of the scheme is to offer rewards and inducements to join an insurance company and penalties for those who do not. The plan is not compulsory in the legal sense, however, for each citizen is free to join an insurance company or not.

Compulsion is resorted to in dealing with certain groups of diseases which are of public health significance. The treatment of

venereal diseases is compulsory and free for everybody, regardless of economic status or membership in an insurance fund, (in effect since 1774). All persons suffering from an epidemic disease are treated free. Vaccination is compulsory (since 1871) and free. Substantial aid, also without penalties, is given for the care of tuberculosis. Other compulsory regulations are in force in regard to illegitimate children and the children of divorced parents and those in unsatisfactory homes and boarding homes.

There are 1646 Health Insurance Associations in Denmark and they include 63% of the adult population. The insurance benefits include free and complete medical care, free hospitalization and a daily sickness allowance ranging from 40 öre to 6 crowns a day. All children under fifteen years of age are provided with full benefits without premiums where both parents are insured.

All matters regarding medical care rest with the physician, without "control" physicians or other checks. The plan is simple and efficient. The only check is in the terms of contract between the Danish Medical Association and the insurance companies. The Association safeguards professional privileges but must also guarantee that the quality of medical attention is maintained. Complaints are made occasionally and the Association takes any action necessary. Only members of the Association may serve as insurance physicians. The basis of payment, choice of physician and similar matters are a matter of contract between the companies and the Association.

There is free choice of physicians but the physicians have agreed to provide professional services to only those who live within 12 kilometers of the physician's home. Copenhagen is divided into districts and a physician cares for only those of his insurance patients who live in the district. A physician is limited to 3,000 insured persons.

Compensation of Physicians

Doctors are remunerated by a fixed annual sum or in accordance with the services they render. The first method, known as *Tarif I,* is usually used in the cities and is not the same in all localities. In Copenhagen, the rate is 9 crowns per member and 18 crowns per family, irrespective of the number of children. In Jutland, *Tarif I* provides 11.70 crowns per member and 23.40 crowns per family. Doctors are allowed to charge additional fees

for first aid in severe injuries, fractures and dislocations, assistance rendered colleagues, extraction of teeth, certification for admission to insane hospitals and for calls after 6 P. M. and on Sundays or holidays.

Tarif II usually provides a fee of 3.36 crowns for an office visit and 4.2 crowns for a domiciliary call plus travel expenses. Fees for calls between 6 P. M. and 8 A. M. are 50% greater.

Each insurance association may provide optional benefits. These may include special medical treatment, dental treatment, special remedies (patent medicines, tonics, patent foods, special diets, surgical dressings and appliances), home nursing, massage and similar extra services.

The income and expenditures for the insurance companies in 1925 were:

Premiums by members	26,500,000	crowns
Allowances from state	13,000,000	
Other receipts (interest, etc.)	4,200,000	
Total Income	43,700,000	
Expenditures	41,200,000	

AUSTRIA

Austria has compulsory insurance on a comprehensive basis the details of which resemble those of Germany. Vienna is badly overcrowded with physicians partly because of the return to it of many physicians formerly living in the territory lost during the war* (it is said that the number has doubled since the war). Foreign physicians are not permitted to practice in Austria.

The Socialist Government of Vienna has undertaken an extensive program for social welfare and public health. Welfare work begins with the unborn child. Every needy woman is entitled to apply to one of the 34 prenatal clinics of the Child Welfare Department not later than the fourth month of pregnancy. At every maternity home, city health visitors are in attendance to help mothers and babies in case of need. One-half of all illegitimate children and 40% of legitimate children are born in maternity homes. All other children are immediately followed up by a

* The pre-war Empire had a population of 54,000,000, the present Republic has 6,500,000.

municipal health visitor. No child is born in the city without an offer of assistance from the municipality.

Fourteen Child Welfare Center classes are held for backward children and the 89 city nurseries take care of many small children and provide meals if desired. The city has decided to build 112 more nurseries.

School physicians and nurses supervise the health of children in the schools. Every child has a complete physical examination, 75% have a tuberculin test. Many of the schools have dining rooms and 82% of the meals served there by the city are free. The Child Welfare Bureau has charge of numerous relief activities, retreats and welfare institutions. A Children's Reception Office classifies and makes arrangements to meet the particular individual problems of all children who need assistance. It serves as a diagnostic center and clearing house for medical, social and mental needs. The children are sent to hospitals, foster homes, orphanages, sanatoria, to special schools for backward children, vocational training centers, etc. All children up to 18 years of age are eligible.

Eleven dental clinics for school children, a municipal eye clinic, nine tuberculosis clinics and similar public health activities have been actively supported by the city. The city has erected a great many large modern apartment houses for 15 to 100 families, which are leased at very low rents. The rents are not fixed by the cost of construction but are intended to cover maintenance. They do not cover even the interest on the expenditures. The drastic Rent Protection Acts have fixed rentals by private individuals to one-half the prewar rate on all property but the rent is payable in the greatly deflated paper kronen (1 gold krone = 14,400 paper kronen). A private individual cannot afford to hold property now. Taxation is so heavy that most property is in the process of confiscation. The municipality already owns more than one-third of the area of Vienna. 30,000 dwellings mostly in apartments have already been built by the city and by 1932 the number will be 60,000.

SWITZERLAND

In Switzerland, various plans of insurance are in force. In some cantons the entire population is covered. Fees to doctors are about 2 francs an office visit and 3 francs for home calls. Nearly 70% of the physicians are on insurance practice.

THE NETHERLANDS

The Netherlands adopted compulsory insurance in 1913 which was to apply to all wage earners except domestic servants, but the government changed and the plan was not put into effect. Most of the insurance there is through mutual aid funds but it is reported that insurance is to be compulsory in 1930. At present about 23% of the population is insured but in cities like Amsterdam the proportion rises to 53%.

Different funds have different methods of dealing with their responsibilities. The Algemeen Ziekenfonds voor Amsterdam has 130,000 members with an income limit of 1,800 guilders for single and 2,700 guilders for married persons (allowance of 100 guilders additional for each child). There are 237 physicians associated with this fund (1 to about 500 persons) and a member can choose any physician of the list of the fund, but not outside physicians. This fund provides additional insurance for hospitalization (including operations, etc.) for forty-two days.

Employers of domestic help in the Netherlands are obliged to provide medical care of their employees for six weeks. Most of the employers take out insurance to cover that responsibility. Hospital insurance in Amsterdam can be secured for 7½ guilders per person per year which will provide for 42 days of hospital care in a given year.

About 60% of the physicians in the cities are associated with funds. The usual fees of physicians are 3 to 4 guilders per person and 6 to 8½ guilders per family per year for insured persons.

The medical profession itself has set up forty sickness funds known as Association Funds which are administered by the doctors. The doctors and chemists are paid the usual fees and any member of the medical association may be admitted to these funds.

SWEDEN

There are about 1,200 voluntary insurance funds in Sweden of which nearly 800 are local rural funds covering the usual range of sickness, maternity and funeral expenses. Some receive a state subsidy for certain features of their work. In 1920, 16.4% of the population was insured but in 1924 the proportion was below 12%.

The whole question of compulsory sickness and unemployment

insurance was made the subject of study by the government of Sweden recently and the conclusion was reached that it should not be recommended for adoption.

FRANCE

There are almost 19,000 different mutual benefit societies in France:

Free Societies engaged in	
1. Sickness insurance	1,536
2. Sickness insurance and pensions	186
3. Maternity insurance	1
Approved and Recognized Societies engaged in	
1. Sickness insurance	7,037
2. Sickness and old age insurance	8,053
3. Maternity insurance	91
School Societies engaged in sickness and pensions insurance	1,883

The total membership of the societies is about 10% of the population.

A comprehensive compulsory insurance plan for France is scheduled to be inaugurated in 1930.

APPENDIX

QUALIFICATIONS REGISTERABLE IN MEDICAL REGISTER, GREAT BRITAIN

L.R.C.P. (Licentiate of the Royal College of Physicians)*

M.R.C.P. (Member of the Royal College of Physicians)

F.R.C.P. (Fellow of the Royal College of Physicians)

M.R.C.S. (Member of the Royal College of Surgeons)†

F.R.C.S. (Fellow of the Royal College of Surgeons)

L.M.R.C.S. (Licentiate in Midwifery of the Royal College of Surgeons)

L.R.F.P.S. (Licentiate of Royal Faculty of Physicians and Surgeons of Glasgow)

F.R.F.P.S. (Fellow of Royal Faculty of Physicians and Surgeons of Glasgow)

L.M.R.C.P. (Licentiate in Midwifery of the Royal College of Physicians of Ireland)

L.S.A. (Licentiate of Apothecaries Society of London)

L.M.S.S.A. (Licentiate in Medicine, Surgery and Midwifery of Apothecaries Society of London)

L.A.H. (Licentiate of Apothecaries Hall, Dublin)

M.D. (Doctor of Medicine of the Universities)

M.B. (Bachelor of Medicine of the Universities)

L.Med. (Licentiate in Medicine of the Universities)

B.Ch. (Bachelor of Surgery of the Universities)

B.Chir. (Bachelor of Surgery of the Universities)

B.S. (Bachelor of Surgery of the Universities)

M.Ch. (Master of Surgery of the Universities)

M.Chir. (Master of Surgery of the Universities)

M.S. (Master of Surgery of the Universities)

L.S. (Licentiate in Surgery, University of Dublin)

M.A.O. (Master in Obstetrics, University of Dublin)

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* Royal College of Physicians of London, Edinburgh, Ireland.
† Royal College of Surgeons of England, Edinburgh, Ireland.

THE LICENSING BODIES IN GREAT BRITAIN

Universities

Aberdeen, University of
Belfast, Queen's University of
Birmingham, University of
Bristol, University of
Cambridge, University of
Dublin, University of
Durham, University of
Edinburgh, University of
Glasgow, University of
Ireland, National University of
Leeds, University of
Liverpool, University of
London, University of
Manchester, Victoria University of
Oxford, University of
St. Andrew's, University of
Sheffield, University of
Wales, University of

Licensing Corporations

Apothecaries' Hall of Ireland
Apothecaries' Society of London
English Conjoint Board
Irish Conjoint Board
Scottish Conjoint Board

LICENSING CORPORATIONS IN GREAT BRITAIN

Apothecaries' Hall of Ireland

Apothecaries' Society of London

English Conjoint Board
- Royal College of Physicians of London
- Royal College of Surgeons of England

Irish Conjoint Board
- Royal College of Physicians of Ireland
- Royal College of Surgeons in Ireland

Scottish Conjoint Board
- Royal College of Surgeons of Edinburgh
- Royal College of Physicians of Edinburgh
- Royal Faculty of Physicians and Surgeons of Glasgow

UNIVERSITIES AND SCHOOLS OF MEDICINE IN GREAT BRITAIN

I. Universities (Including their Colleges)

Aberdeen, University of
Belfast, Queen's University
Birmingham, University of
Bristol, University of
Cambridge, University of
Dublin, University of
    Trinity College
Durham, University of
    Durham College of Medicine, Newcastle-upon-Tyne
Edinburgh, University of
Glasgow, University of
    Queen Margaret College
Ireland, National University of
    University College, Cork
    University College, Dublin
    University College, Galway
Leeds, University of
Liverpool, University of
London, University of
    St. Bartholomew's Hospital and Medical College
    Charing Cross Hospital and Medical School
    St. George's Hospital and Medical School
    Guy's Hospital and Medical School
    King's College
    King's College Hospital and Medical School
    London Hospital and Medical College
    St. Mary's Hospital and Medical School
    Middlesex Hospital and Medical School
    St. Thomas's Hospital and Medical School
    University College
    University College Hospital and Medical School
    Westminster Hospital and Medical School
    London (Royal Free Hospital) School of Medicine for Women
Manchester, Victoria University
Oxford, University of
St. Andrew's, University of
    University College, Dundee
Sheffield, University of
Wales, University of
    University College of Wales, Aberstwyth
    University College of North Wales, Bangor
    University College of South Wales and Monmouthshire, Cardiff
    Welsh National School of Medicine, Cardiff
    University College, Swansea

II. Other Schools of Medicine Recognized by the Licensing Bodies

Dublin, Royal College of Surgeons
Schools of Surgery
Edinburgh, School of Medicine of the Royal Colleges
Glasgow, Anderson's College
St. Mungo's College

PHYSICIANS ON MEDICAL REGISTER

Year	*Names Added in Year*	*Total Number on December 31*
1900	1,345	36,355
1910	1,062	40,483
1915	1,526	43,225
1920	1,457	44,761
1925	2,570	51,738
1926	2,120	52,614
1927	1,941	53,769
1928	1,656	54,252

NUMBER OF PERSONS ON MEDICAL REGISTER

1928.

England	25,652
Scotland	17,021
Ireland	7,924
Total for Great Britain	50,597
Colonial	3,041
Foreign	131
Total	53,769

REGISTRATION IN GREAT BRITAIN OF FOREIGN PRACTITIONER*

Where a person shows to the satisfaction of the registrar of the General Council that he holds some recognized foreign medical diploma or diplomas granted in a foreign country to which this Act applies, and that he is of good character, and that he is by law entitled to practice medicine, surgery, and midwifery in such foreign country, he shall, on application to the said registrar, and on payment of such fee not exceeding five pounds as the General Council may from time to time determine, be entitled, without examination in the United Kingdom, to be registered as a foreign practitioner in the medical register.

* Quoted from Medical Act of 1886.

THE COURSE OF STUDY AND EXAMINATION REQUIRED BY THE GENERAL MEDICAL COUNCIL

1. Elements of General Biology (this course may be taken before registration).
2. Chemistry, Physics and Biology (in their application to Medicine).
3. Human Anatomy and Human Physiology including Gross Anatomy, Histology, Embryology, Biochemistry and Biophysics.
4. Elementary Bacteriology.
5. Pathology including General and Special Pathology, Morbid Anatomy and Clinical Pathology. Each student should be required to have instruction in performing autopsies and to have acted as a post-mortem clerk in at least ten autopsies.
6. Pharmacology and Materia Medica.
7. Forensic Medicine, Hygiene and Public Health.
8. Medicine including Applied Anatomy, Applied Physiology, Clinical Pathology and Therapeutics. The following subjects are specifically mentioned: Children's Diseases, Acute Infectious Diseases, Tuberculosis, Mental Diseases, Diseases of the Skin, Theory and Practice of Vaccination. Each student is required to take a medical clinical clerkship of six months, of which at least three months must have been spent in the hospital wards, and to attend lectures or demonstrations in clinical medicine and general out-patient and in-patient medical practice during seven terms.
9. Surgery, including Applied Anatomy, Applied Physiology and Clinical Pathology. The subjects specifically mentioned are: Anaesthetics, Diseases of the Eye, Diseases of the Ear, Nose, and Throat, Radiology, Venereal Diseases, Orthopedic and Mechanotherapeutics. Each student is required to take a surgical dressership for a period of six months, of which at least three must be spent in hospital wards. He must also attend lectures and demonstrations in Clinical Surgery and general in-patient and out-patient surgical practice during seven terms.
10. Midwifery and Diseases of Women including Prenatal and Infant Hygiene. Each student is obliged to give continuous attendance on obstetrical hospital practice for a period of three months during one month of which at least he should perform the duties of an intern student and attend twenty cases of labor under supervision. He should not take extern or district maternity work until he has personally delivered at least five cases in the hospital.

GENERAL PLAN OF BRITISH MEDICAL COURSE

First Year,	Chemistry Physics Zoology
Second Year,	Anatomy Physiology and Biochemistry
Third Year—Winter,	Anatomy Physiology and Biochemistry Pharmacology
Summer,	Pathology Materia Medica Medicine Surgery
Fourth Year,	Clinical Subjects
Fifth Year,	Clinical Subjects

CURRICULUM AT ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE

First Year,	Biology Chemistry Physics
Second Year,	Organic and Biochemistry Anatomy Physiology and Histology
Third Year, Winter Session,	Anatomy Physiology Pharmacology and Pharmacy
Summer Session,	Applied Anatomy Clinical Subjects (Elementary)
Fourth Year, Winter Session,	Morbid Anatomy Pathological Histology Clinical Subjects and Hospital Practice
Summer Session,	Clinical Subjects and Hospital Practice Therapeutics Forensic Medicine
Fifth Year,	Clinical Subjects and Hospital Practice
Sixth Year,	Clinical Subjects and Hospital Practice Anaesthetics Vaccination

CURRICULUM AT ST. THOMAS'S HOSPITAL MEDICAL SCHOOL

First Year,	Biology Chemistry Physics
Second Year,	Organic and Applied Chemistry Anatomy and Physiology Pharmacy and Materia Medica
Third Year,	Anatomy Physiology and Chemical Physiology Pharmacology
Fourth and Fifth Years,	Morbid Anatomy Medicine, Surgery Bacteriology and Pathology Applied Anatomy Venereal Diseases Ophthalmology Midwifery Forensic Medicine and Toxicology Mental Diseases and Public Health

CURRICULUM AT UNIVERSITY OF LEEDS

First Year,	Chemistry Physics Zoology Botany
Second Year,	Organic Chemistry Anatomy Physiology Pharmacy Materia Medica
Third Year,	Anatomy Physiology Bacteriology Medicine and Surgery (Lectures)
Fourth Year,	Pharmacology and Pathology Clinical Subjects
Fifth Year,	Clinical Subjects Pharmacology Special Pathology Applied Anatomy
Sixth Year,	Clinical and Allied Subjects

CURRICULUM AT UNIVERSITY OF EDINBURGH

First Year,		Botany Physics Anatomy Chemistry Zoology
Second Year,		Physiology Anatomy Histology
Third Year,		Pathology Pharmacology Bacteriology Clinical Subjects
Fourth Year,		Clinical and Allied Subjects
Fifth Year,*	Section A	Clinical Midwifery Clinical Gynecology Diseases of Children
	Section B	Clinical Medicine Dispensary Practice Tuberculosis
	Section C	Clinical Surgery Operative Surgery Venereal Diseases

PROFESSIONAL EXAMINATIONS OF THE EXAMINING BOARD IN ENGLAND

I. Premedical Examination
   Chemistry
   Physics

II. First Professional Examination
   Part 1. a. Anatomy, including Histology and Embryology
   b. Physiology, including Biochemistry
   Part 2. Pharmacology, Practical Pharmacy and Materia Medica

III. Final Professional Examination
   Part 1. Pathology (including Morbid Anatomy, Morbid Histology and Clinical Pathology) and Bacteriology
   Part 2. a. Medicine, including Medical Anatomy, Forensic Medicine and Public Health
   b. Surgery, including Surgical Anatomy and the use of Surgical Appliances
   c. Midwifery and Gynecology

* Sections change each term.

PROFESSIONAL EXAMINATIONS OF THE UNIVERSITY OF EDINBURGH

I. First Examination
- Chemistry
- Physics
- Botany
- Zoology (or Biology)

II. Second Examination
- Anatomy
- Physiology

III. Third Examination
- Pathology including Bacteriology
- Materia Medica including Pharmacology and Therapeutics

IV Fourth Examination
- Forensic Medicine
- Public Health
- Surgery and Clinical Surgery
- Practice of Medicine and Clinical Medicine
- Midwifery
- Diseases peculiar to Women and Infants

PROFESSIONAL EXAMINATIONS OF THE UNIVERSITY OF LONDON

I. First Examination
- Inorganic Chemistry
- Physics
- Biology

II. Second Examination

Part 1. Organic Chemistry

Part 2.
- Anatomy
- Physiology
- Pharmacology

III. Third Examination
- Medicine
- Surgery
- Obstetrics and Gynecology
- Pathology
- Forensic Medicine and Hygiene

PROFESSIONAL EXAMINATIONS OF THE UNIVERSITY OF CAMBRIDGE

I. First Examination

- Part 1. General and Inorganic Chemistry
- Part 2. Mechanics
- Part 3. Physics
- Part 4. Elementary Biology

II. Second Examination

- Part 1. Organic Chemistry
- Part 2. Anatomy and Physiology
- Part. 3 Pharmacology and Pharmaceutical Chemistry
  General Pathology

III. Third Examination

- Part 1. a. Principles and Practice of Surgery
  b. Midwifery and Diseases peculiar to Women
- Part 2. a. Principles and Practice of Physics (including Diseases of Children, Mental Diseases and Medical Jurisprudence)
  b. Pathology (including Hygiene and Preventive Medicine) and Pharmacology (including Therapeutics and Toxicology)

PROFESSIONAL EXAMINATIONS OF THE UNIVERSITY OF BIRMINGHAM

I. M.B. Physics
Chemistry
Biology

II. M.B. Part 1. Organic Chemistry
Part 2. Anatomy
Physiology

III. M.B. Pathology
Bacteriology

IV. M.B. Forensic Medicine
Toxicology
Public Health
Pharmacology and Therapeutics

Final M.B. Medicine
Surgery
Midwifery and Diseases of Women
Ophthalmology
Mental Diseases

REQUIRED MEDICAL CURRICULUM IN GREAT BRITAIN BY LICENSING BODIES

	Length of Curriculum (in years)
Aberdeen, University of	5
Belfast, Queen's University of	5
Birmingham, University of	5
Bristol, University of	6
Cambridge, University of	5
Dublin, University of	5
Durham, University of	5
Edinburgh, University of	5
Glasgow, University of	5
Leeds, University of	5½
Liverpool, University of	5
London, University of	5½
Manchester, Victoria University of	5½
National University of Ireland	5
Oxford, University of	6
St. Andrew's, University of	5
Sheffield, University of	5
Wales, University of	6
Apothecaries' Hall of Ireland	5
Apothecaries' Society of London	5
English Conjoint Board	5
Scottish Conjoint Board	5
Irish Conjoint Board	5

AVERAGE LENGTH OF CURRICULUM BETWEEN REGISTRATION AS A STUDENT AND QUALIFICATION, 1927

Universities	*Average Length of Curriculum*	
	Years	*Months*
Aberdeen University	5	5
Belfast University	5	2
Birmingham University	5	10
Bristol University	6	0
Cambridge University	6	4
Dublin University	5	4
Durham University	5	3
Edinburgh University	5	8
Glasgow University	5	7
Leeds University	5	3
Liverpool University	6	2
London University	6	0
Manchester University	5	10
National University of Ireland	5	9
Oxford University	7	2
St. Andrew's University	5	10
Sheffield University	5	6
Wales, University of	..	..
Licensing Corporations		
Apothecaries' Hall of Ireland	..	..
Apothecaries' Society of London	7	0
English Conjoint Board	6	2
Irish Conjoint Board	6	1
Scottish Conjoint Board	6	0
Average for All	5	10

FULL-TIME STUDENTS IN MEDICINE (INCLUDING DENTISTRY) IN GREAT BRITAIN

Institution	*Men*	*Women*	*Total*
Birmingham University	258	31	289
Bristol University	165	27	192
Cambridge University	345	12	357
Durham University College of Medicine	218	27	245
Exeter University College	6	..	6
Leeds University	286	33	319
Liverpool University	341	41	382
London University—			
Charing Cross Hospital Medical School	53	54	107
East London College	30	..	30
King's College	194	61	255
King's College Hospital Medical School	139	66	205
London Hospital Medical College	333	2	335
London School of Medicine for Women	..	278	278
Middlesex Hospital Medical School	173	..	173
Royal Dental Hospital School	121	12	133
St. Bartholomew's Hospital Medical School	583	..	583
St. George's Hospital Medical School	81	..	81
St. Mary's Hospital Medical School	193	33	226
St. Thomas's Hospital Medical School	413	..	413
School of Hygiene and Tropical Medicine	4	2	6
University College	159	34	193
University College Hospital Medical School	214	55	269
Westminster Hospital Medical School	43	31	74
Total, London Institutions	2,733	628	3,361
Manchester University	325	42	367
Nottingham University College	1	1	2
Oxford University	123	6	129
Sheffield University	83	16	99
Total, England	4,884	864	5,748
Bangor University College	2	1	3
Cardiff University College	164	29	193
Swansea University College	5	..	5
Total, Wales	171	30	201
Aberdeen University	210	21	231
Edinburgh University	956	115	1,071
Glasgow University	756	107	863
St. Andrew's University	97	11	108
Total, Scotland	2,019	254	2,273
Grand Total, Great Britain	7,074	1,148	8,222*

* Exclusive of Guy's Hospital Medical School. About 19% are Dental Students.

RESULTS OF EXAMINATIONS BEFORE VARIOUS LICENSING BODIES IN GREAT BRITAIN BY SUBJECTS (1927)

Licensing Body	*Chemistry*		*Physics*		*Biology*	
	Number	*Passed*	*Number*	*Passed*	*Number*	*Passed*
Aberdeen University ..	50	84%	55	84%	116	87%
Belfast University	87	66	(Under Chemistry)		68	71
Birmingham University	68	69	43	63	38	74
Bristol University	44	61	26	54	28	71
Cambridge University .	527	65	467	65	317	46
Dublin University	65	66	69	65	124	87
Durham University ...	94	65	49	63	41	66
Edinburgh University .	212	65	188	80	385	79
Glasgow University ...	148	85	190	68	346	73
Leeds University	30	67	(Under Chemistry)		(Under Chemistry)	
Liverpool University ..	53	68	(Under Chemistry)		(Under Chemistry)	
London University	726	79	360	75	446	65
Manchester University .	49	80	50	78	84	95
National University of Ireland	63	60	64	59	108	67
Oxford University ...	267	52	223	45	228	54
St. Andrew's University	36	83	16	94	73	88
Sheffield University ...	12	50	13	69	8	75
Wales University	49	86	26	69	48	85
Apothecaries' Hall of Ireland	3	33	3	33	3	33
Apothecaries' Society of London	10	80	(Under Chemistry)		1	
English Conjoint Board	419	60	408	61	23	83
Irish Conjoint Board ..	69	57	67	72	40	88
Scottish Conjoint Board	6	67	7	86	84	46

RESULTS OF EXAMINATIONS BEFORE VARIOUS LICENSING BODIES IN GREAT BRITAIN BY SUBJECTS (1927)

Licensing Body	*Anatomy*		*Physiology*	
	Number	*Passed*	*Number*	*Passed*
Aberdeen University	49	94%	49	94%
Belfast University	112	62	111	59
Birmingham University	42	62	42	62
Bristol University	17	76	17	71
Cambridge University	261	51	256	55
Dublin University	71	63	70	64
Durham University	26	54	26	54
Edinburgh University	195	76	190	77
Glasgow University	164	74	164	70
Leeds University	8	50	8	50
Liverpool University	61	51	61	51
London University	346	78	344	83
Manchester University	51	71	51	71
National University of Ireland	85	64	85	64
Oxford University	63	70	59	68
St. Andrew's University	26	58	35	71
Sheffield University	25	80	27	67
Wales University	25	88	23	83
Apothecaries' Hall of Ireland	5	60	5	60
Apothecaries' Society of London	42	57	43	67
English Conjoint Board	384	49	383	51
Irish Conjoint Board	28	64	36	69
Scottish Conjoint Board	69	54	63	63

RESULTS OF EXAMINATIONS BEFORE VARIOUS LICENSING BODIES IN GREAT BRITAIN BY SUBJECTS (1927)

Licensing Body	*Medicine*		*Surgery*		*Midwifery*	
	Number	*Passed*	*Number*	*Passed*	*Number*	*Passed*
Aberdeen University	74	88%	80	85%	79	86%
Belfast University	136	53	136	53	136	53
Birmingham University	63	54	73	54	73	54
Bristol University	33	67	33	70	36	78
Cambridge University	156	61	176	66	176	66
Dublin University	68	79	77	68	67	64
Durham University	49	76	49	76	49	76
Edinburgh University	187	78	177	82	180	79
Glasgow University	260	59	260	59	260	59
Leeds University	46	72	46	72	46	72
Liverpool University	78	68	78	68	78	68
London University	317	79	351	56	351	76
Manchester University	66	79	40	80	35	80
National University of Ireland	194	51	180	61	174	61
Oxford University	40	58	50	58	50	58
St. Andrew's University	32	63	31	65	28	82
Sheffield University	14	71	13	77	13	77
Wales University	15	53	13	69	14	79
Apothecaries' Hall of Ireland .	9	78	8	63	8	88
Apothecaries' Society of London	95	59	116	61	120	53
English Conjoint Board 1330		56	1323	57	1102	67
Irish Conjoint Board	67	64	68	69	52	67
Scottish Conjoint Board	278	50	283	46	215	64

UNIVERSITY OF LONDON
FIRST EXAMINATION FOR MEDICAL DEGREES AND DENTAL SURGERY

Year	*Candidates*	*Passed*	*Percentage Passed*
1921	671	332	49%
1922	648	325	50
1923	530	273	52
1924	439	252	57
1925	504	259	51
1926	449	260	58
1927	464	267	58

SECOND EXAMINATION FOR MEDICAL DEGREES, PART I

Year	*Candidates*	*Passed*	*Percentage Passed*
1921	523	397	76%
1922	460	312	68
1923	474	315	64
1924	434	284	65
1925	370	301	81
1926	368	289	79
1927	372	287	77

SECOND EXAMINATION FOR MEDICAL DEGREES, PART II

Year	*Candidates*	*Passed*	*Percentage Passed*
1921	540	305	56%
1922	663	422	64
1923	505	288	57
1924	480	297	62
1925	423	241	57
1926	393	240	61
1927	431	255	59

UNIVERSITY OF LONDON
BACHELOR OF MEDICINE AND BACHELOR OF SURGERY

Year	*Candidates*	*Passed*	*Percentage Passed*
1921	300	183	61%
1922	314	172	55
1923	381	226	59
1924	499	303	61
1925	597	351	59
1926	607	379	62
1927	420	289	69

DOCTOR OF MEDICINE

Year	*Candidates*	*Passed*	*Percentage Passed*
1921	61	39	64%
1922	53	36	68
1923	30	19	63
1924	40	25	63
1925	59	36	61
1926	65	32	49
1927	65	40	62

MASTER OF SURGERY

Year	*Candidates*	*Passed*	*Percentage Passed*
1921	18	8	44%
1922	18	5	28
1923	19	4	21
1924	13	5	38
1925	14	3	21
1926	22	5	23
1927	23	5	22

AGE OF GRADUATION,* UNIVERSITY OF LONDON

Age	*Number of Candidates*
21	2
22	19
23	51
24	78
25	96
26	57
27	46
28	28
29	18
30	24
31	16
32	13
33	5
34	4
35-57	25

Mean Age:—25-26 Years
Average Age:—26 Years, 8 Months

* M.B., B.S. Examination, November, 1928, and May, 1929.

AGE OF CANDIDATES RECEIVING M.D.,* UNIVERSITY OF LONDON

Age	*Number of Candidates*
23	1
24	3
25	4
26	8
27	11
28	9
29	3
30	6
31	9
32	5
36	3
38 and over	10

Average Age:—30 Years, 8 Months

* M.D. Examination, July and December, 1928.

EXPERIMENTS IN HUMAN PHYSIOLOGY
UNIVERSITY OF MANCHESTER

First Term

Coagulation Time of blood. Two methods.
Sedimentation Time of blood.
Fragility of Red Cells. Hypotonic Haemolysis.
Estimation of Haemoglobin. Gowers-Haldane Haemoglobinometer.
Red, White and Differential White Cell counting.
Haematocrite. Relative volumes of cells and plasma.
Blood Grouping (on Moss' Table).
Reaction to blood. Dale-Evans method.
Percentage saturation of Hb with oxygen by Barcroft's differential manometer.
Total oxygen capacity of blood by Haldane's blood gas apparatus.
Total CO_2 content of blood by Haldane's blood gas apparatus.

Second Term

Gas analysis by the Smaller Haldane Apparatus.
Determination of Alveolar CO_2 partial pressure. Haldane-Priestley method.
Determination of Resting Metabolism by Douglas bag method.
Demonstration of Determination of Resting Metabolism by Benedict's method.
Determination of Dead Space and Alveolar Ventilation.
Respiratory Tracings using the Stethograph. Effects of CO_2.
O_2 forced breathing, etc.
Physical Fitness Tests. Breath-holding, Spirometry, Vital Capacity, Maximal Manometer tests, etc.
Pulse and Temperature charts. Filled up by students at given times for a week.
Effects of exercise, posture, forced breathing, etc., on the Pulse.
Sphygmograms (Dudgeon's).
Polygraphic Venous pulse tracings (Mackenzie's Polygraph).
Experiments on Arterial Blood Pressure. Various methods of measuring.
Schneider's Circulatory Efficiency Test.
Venous Blood Pressure (latterly this has become a demonstration).

Third Term

General or Clinical Examination of the Heart and Lungs.
Microscopic examination of capillaries in vivo.
Electrocardiograms. Demonstration of the electrocardiograph.
Mosso's Ergograph.
Ergometry. Some students usually determine gross and net efficiency using a bicycle ergometer.
Dynamometers.
Muscle Tremor or Posture.
Electrical Testing of Muscles and Nerves.
General Examinations of the Normal Eye.
Field of Vision. (Priestley-Smith Perimeter.)
Determination of position and size of the blind spot.
Schneiner's experiment on Near Point and Accommodation.
Retinal and Visual Acuity.
Use of the Ophthalmoscope on Human and Artificial Eyes.
Experiments on Color Vision.
Experiments on Skin Sensation.

SAMPLE OF CORRELATION TEACHING IN THIRD YEAR AT EDINBURGH (For Two Weeks)

Medicine and Surgery	*Pharmacology and Therapeutics*	*Pathology and Bacteriology*
S) Mouth and Tongue	(P) Emetics	(P) Mouth and Pharynx
S) Jaws and Pharynx	(P) Drugs on Stomach	(P) Oesophagus, Tumours
S) Oesophagus	(TH) Diseases of Stomach	(P) General Account of Tumour
M) General Principles; Digestion; Methods	(TH) Diseases of Stomach	(P) General Account of Tumour
M) Secretory and Motor Disturbances	(P) Gut Movements	(B) Bacteriology of Elementary Tract. B. Coli and other Intestinal Bacteria.
M) Ulceration of Stomach		(B) Do.
M) Duodenum		(B) Do.
) Ulcer of Stomach		(B) Do.

SYLLABUS OF FORENSIC MEDICINE AND TOXICOLOGY AT THE UNIVERSITY OF BIRMINGHAM

Historical outline of the legal and social relations of the Medical profession in England. Rise of physicians, surgeons, and apothecaries, and their Corporations. General Medical Council. The Medical Register.

The scope of Forensic Medicine. Legal responsibilities and duties of medical men. The process of law before Coroner, Magistrate, and Judge. Medical evidence.

The signs of death. Determination of the date of death. The causes of death, and particularly of sudden death. The post-mortem as a medico-legal inquiry. Exhumation.

Identification of the living and of the dead. Determination of age, sex, stature, and personal peculiarities.

Death by violent or unnatural causes—drowning, hanging, strangulation, suffocation, and smothering; wounds and mechanical injuries; extremes of temperature; explosives; electric shock; lightning stroke; starvation. Indications of accident, suicide, or homicide.

Wounds and other personal injuries; question of accident or assault; compensation claims in such cases.

Offences against chastity; rape; unnatural offences. Criminal abortion. Live birth. Infanticide.

Malapraxis and malingering.

Medico-legal aspects of the Workmen's Compensation Act.

Lunacy certificates.

Life Assurance.

Human Blood; its microscopical, chemical, spectroscopical, and biological features. Special characters of the blood of other mammals, birds, fishes and amphibians.

Discrimination of stains resembling blood; iron salts; vegetable colors, aniline dyes.

Seminal stains. Gonorrhoeal pus.

Hair of man and domestic animals.

Fibres: cotton, linen, wool, silk.

Marks made by vitriol and other mineral acids.

Demonstration of the Foetus at various ages.

Finger-prints and footmarks.

The identification of the following poisons:

Sulphuric, nitric, hydrochloric, oxalic, and hydrocyanic acids.

Caustic potash, caustic soda, and ammonia.

Silver, lead, mercury, copper, arsenic, antimony, tin, zinc, chromium and chromates, barium.

Alcohol, ether, chloroform, chloral, aniline, phenol, meconic acid, morphine, strychnine, cocaine, brucine, eserine, atrophine.

SYLLABUS OF COURSE IN FORENSIC MEDICINE AT EDINBURGH

Methods of judicial investigation; procedure in Courts of Justice; medical evidence.

Death in its medico-legal relations; certification of death; the signs of death and post-mortem changes; the medico-legal examination of the dead body.

Sudden death: its causation and medico-legal importance.

Identity of the living and of the dead.

Death from violence and unnatural causes, and the consideration of various questions connected therewith.

Medico-legal relations of pregnancy and delivery. Abortion. Infanticide. Rape.

The examination of blood and seminal stains.

Medical Ethics.

Legal responsibilities and duties of medical men.

Insanity in its medico-legal relations; criminal responsibility; lunacy certificates; testamentary capacity.

Toxicology; consideration of the general evidences of poisoning. The symptoms and morbid appearances produced, the means of detection, and the treatment of poisoning.

SUGGESTED TOPICS FOR TEACHING OF PREVENTIVE MEDICINE*

1. Meaning and Scope of Preventive Medicine. Its relation to other subjects of medical curriculum. Principles and methods of Personal Hygiene. (Hygiene.)
2. Administrative Applications of Preventive Medicine, and how to use them in relation to practice.
3. Maternity—especially ante-natal and post-natal supervision. (Midwifery.)
4. Medical supervision of Infancy and its Physiology and Pathology. Nurture, management, feeding. The principles and elements of Pediatrics. (Pediatrics.)
5. Hygiene of the Child and School Hygiene—physical and mental. (Pediatrics, Hygiene.)
6. Adolescence, puberty, sex developments, physical training, juvenile employment. (Hygiene.)
7. Sanitation of Dwelling House. The Housing Question. The relation of water supply to health. Nuisances. (Hygiene.)
8. Dietetics and Nutrition—food values, food poisoning, milk supply, specialized milks, pasteurization. (Physiology, Hygiene.)
9. Alcoholism—uses and abuses of alcohol. Industrial, dietetic, convivial drinking. Relation of excess to disease and accident. Clinical and pathological signs. (Physiology, Pathology, etc.)
10. Infectious Diseases and their Prevention—Etiology, channels of infection, clinical characters, course, atypical forms of all principal fevers, sequelae. Diagnosis, notification, isolation, treatment, disinfection, special methods. Principles of Epidemiology. Methods of investigation. (Fevers, Hygiene.)
11. Diseases of Animals communicable to Man—Tuberculosis, anthrax, rabies, tetanus, glanders, parasites, protozoa, etc. Means of commuication and prevention. (Pathology.)
12. Prevention of non-infectious diseases—medical, surgical, obstetric. Conditions and influences leading to such disease. (Clinical subjects, Hygiene.)
13. Serum Therapy. Smallpox, typhoid, tuberculosis, streptococcal infection, and diphtheria as types. Prophylactic and therapeutic sera. Manufacture, dosage, use and effects of vaccines and antitoxins. Immunology. (Pathology, Pharmacology.)
14. Health Insurance. Relation to medical practice, contract and private, and hospitals. Benefits and disadvantages. Administration. (Hygiene.)
15. Industrial Hygiene—Diseases and injuries of occupation. Industrial fatigue and sickness. (Hygiene.)
16. Medical-sociological Questions and Medical Ethics. The position of the Medical Profession: its governance and control. Brief sketch of its history. Relation to other professions. Duties to fellow practi-

tioners. The State and the Doctor. Voluntary and State Hospitals. Labor and its conditions in relation to sickness. The Problem of Poverty. Pauperism in relation to disease. Crime, insanity, inebriety, suicide, their relation to diseases. Social immorality. The venereal problem. Old Age Pensions, Army Pensions. (Hygiene, Forensic Medicine.)

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* *Recent Advances in Medical Education in England*, 1923, by Sir George Newman.

THE TOTAL EXPENDITURES AND COST PER STUDENT IN A FEW BRITISH MEDICAL SCHOOLS FOR 1927-28

Medical School	*Total Expenditures*	*Per Student*
Durham	£27,827	£113
King's College	13,463	66
Charing Cross	4,593	43
London Hospital	32,489	97
Middlesex	37,404	216
St. Bartholomew's	41,123	70
St. George's	4,246	52
St. Mary's	17,240	76
St. Thomas's	31,286	75
University College	33,068	123
Westminster	2,933	41

SOURCES OF INCOME OF A FEW MEDICAL SCHOOLS IN LONDON

	Income from Endowments	*Parliamentary Grants*	*Tuition and Other Fees*	*Local Grants*	*Other Income*
King's College Medical School	8%	22%	35%	0%	35%
Charing Cross	0	34	42	22	2
London Hospital	4	42	46	7	1
Middlesex	10	16	24	45	5
St. Bartholomew's	3	38	53	0	6
St. Thomas's	0	42	57	0	1
University College Medical School	29	46	21	0	4
Westminster	0	19	80	0	1

SCHOOLS OF DENTISTRY IN GREAT BRITAIN*

Birmingham: Dental Hospital
Bristol: Royal Infirmary
General Hospital
Dublin: Dental Hospital of Ireland
Dundee: Dental Hospital
Edinburgh: Dental Hospital
Glasgow: Dental Hospital
Leeds: Dental Hospital
Liverpool: Dental Hospital
London: Guy's Hospital Dental School
King's College Hospital Dental School
London Hospital Dental School
National Dental Hospital
Royal Dental Hospital
Manchester: Dental Hospital
Newcastle-upon-Tyne: Dental Hospital
Sheffield: Royal Hospital
The Royal College of Surgeons in Ireland
The Dental Department of any University of the United Kingdom

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* *Medical and Dental Students' Register,* 1928, published by General Medical Council.

REQUIREMENTS FOR DENTAL EDUCATION, GREAT BRITAIN

A. Preliminary Examination and Registration

Every Dental Student shall be registered in the manner and under the conditions prescribed for Medical Students.

Every applicant shall be required to have passed, in addition to the examination in General Education, which shall be the same as that required for Medical Students, an examination in Elementary Physics and Elementary Chemistry, conducted or recognized by one of the Licensing Bodies, which shall also be the same as that required for Medical Students.

Every applicant shall produce evidence that he has attained the age of seventeen years.

B. Professional Study

Every candidate for a Degree or License in Dentistry or Dental Surgery shall be required before admission to the final or qualifying examination to produce certificates showing that:—

1. He is at least twenty-one years of age.
2. He has been registered as a Dental Student.
3. He has, subsequently to the date of registration as a Dental Student, been engaged in professional study for at least four years, of which three years at least shall be spent at a school or schools recognized for professional study by one of the Licensing Bodies.
4. Subsequently to the date of registration as a Dental Student, he has attended at a recognized Medical School courses of instruction, which shall be the same as those required for Medical Students, in the following subjects:—
   a. Chemistry in its application to Medicine.
   b. Physics in its application to Medicine.
   c. Elementary Biology.
   d. Human Anatomy (with dissections and demonstrations) for three academic terms.
   e. Physiology (with laboratory instruction, including practical histology) for two academic terms.
   f. General Pathology (including Bacteriology) for two academic terms.
   g. Medicine for two academic terms.
   h. Surgery for two academic terms.
   i. The practice of a recognized General Hospital or Hospitals of not less than eighty beds with certified instruction in clinical medicine and clinical surgery for four academic terms which should include experiences as Medical Clinic Clerk and Surgical Dresser, and of attendance in the Out-Patient or Casualty Departments and a certificate of clinical instruction in Venereal Disease.

5. He has attended at a recognized Dental School courses of instruction* in the following special subjects:—
   a. Dental Anatomy and Physiology, human and comparative.
   b. Practical Dental Histology and Morbid Histology.
   c. Dental Pathology and Surgery.
   d. Dental Materia Medica and Therapeutics.
   e. Dental Metallurgy (with practical work and demonstrations).
   f. Dental Mechanics (with practical work and demonstrations).
   g. A course of instruction in the use of Anaesthetics, general and local, employed in Dental Practice.
   h. A course of instruction in Radiology as Applied to Dentistry.

   NOTE.—A candidate should produce a certificate of having administered general anaesthetics on at least ten occasions.
6. He has for at least twenty-four calendar months attended, during the ordinary academic terms, the practice of a recognized Dental Hospital or of the recognized Dental Department of a General Hospital.
7. He has received for not less than twenty-four calendar months, or for 2,000 hours, practical instruction in Dental mechanics.

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* Exact hour requirements not copied.

MIDWIVES ROLL, GREAT BRITAIN*
March 31, 1928

Passed the Board's Examinations	48,933
Certification prior to Midwives Act, 1902	9,250
Holding Scottish and Irish Certificates	716
Total Trained Midwives	58,899
Untrained Midwives	2,024
Midwives Roll	60,923

TRAINED MIDWIVES PRACTICING IN 1927*

Enrolled	58,538
Practicing*	13,103
Percentage of enrolled practicing	22.4%

* Untrained midwives practicing, 1,376 or 9.5% of total practicing.

MIDWIVES WHO FILED NOTICE OF INTENTION TO PRACTICE, GREAT BRITAIN*

1921	14,312
1922	14,921
1923	15,505
1924	15,882
1925	16,282
1926	16,436
1927	16,610

* *Report of the Central Midwives Board* for 1928, Ministry of Health.

THE HEALTH ADMINISTRATION OF LONDON

The health administration in London is concentrated in the London County Council which is made up of 144 members of whom 124 are elected directly and 20 are aldermen. The health administration is carried out under the following divisions:—

1. Mental Disease (10 mental asylums, Maudsley Hospital for Mental Disease, epileptic colonies).
2. Mental Deficiency (2 institutions, temporary accommodation at institutions of Metropolitan Asylums Board and two London Boards of Guardians).
3. Venereal Diseases (whole and part time clinics at many London voluntary hospitals supported by grants from London County Council and Ministry of Health).
4. Tuberculosis (tuberculosis dispensaries, tuberculosis institutions, open air schools).
5. Non-institutional Treatment (school medical service, Care Committees associated with the voluntary hospitals).
6. Ambulances (ambulance stations for accident and illness in the streets, factories and private homes).
7. Maternity and Child Welfare (coördinates and supports Infant Welfare Centers, through the local Borough Councils, day nurseries, maternity homes, home nursing).
8. Midwives (Central Midwives Board, central examining and disciplinary body, exercises a general supervision over all midwives practicing in the County).
9. Infant Protection (defective children).

MINISTRY OF HEALTH OF GREAT BRITAIN, PLAN OF ORGANIZATION

(Established 1919)

1. General Health and Epidemiology.
2. Maternity and Child Welfare.
3. Tuberculosis and Venereal Disease.
4. Supervision of Food Supplies.
5. General Practitioner Services (National Health Insurance Act).
6. Sanitary Administration in Relation to Infectious Disease.
7. School Medical Services.
8. Registrar General's Office, Vital and Mortal Statistics.
9. Board of Control (Lunacy).

LONDON VOLUNTARY HOSPITALS

(Supported by private endowments, subscriptions or donations.) (116).

1. General Hospitals with Medical Schools (12).
2. General Hospitals without Medical Schools (100 beds or more). (11).
3. General Hospitals with less than 100 beds (13).
4. Cottage Hospitals (13).
5. Hospitals for Women (6).
6. Hospitals for Children (8).
7. Hospitals for Children (Longer Periods). (5).
8. Lying-In Hospitals (9).
9. Ophthalmic Hospitals (5).
10. Hospitals for Epilepsy and Paralysis (3).
11. Other Hospitals (31).

REGULATIONS OF ENGLISH CONJOINT BOARD REGARDING FOREIGN STUDENTS, EFFECTIVE JULY 31, 1930

Members of recognized universities* outside the British possessions are admissible to the examinations for the Diplomas of L.R.C.P., M.R.C.S., under the following conditions, viz.:—

1. Graduates in medicine and surgery of such universities are required to pass the first examination and subsequently to complete twelve months' hospital practice at a recognized medical school and hospital in this country, before admission to any part of the final examination.

2. Undergraduates of such universities are required to complete the full curriculum of 33 months for the final examination at a recognized medical school and hospital in this country, after passing the first examination.

Candidates holding the Diploma of the National Board of Medical Examiners of the United States of America are admissible to the examinations for the Diplomas of L.R.C.P., M.R.C.S., under the same conditions as members of recognized universities in the British posessions.

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* Eight medical schools in Canada and forty-eight schools in the United States are recognized.

GERMANY

State	*Medical Schools*
Prussia	Berlin
	Bonn
	Breslau
	Frankfurt a.M.
	Göttingen
	Greifswald
	Halle
	Kiel
	Köln
	Königsberg
	Marburg
	Münster
Bavaria	Erlangen
	München
	Wurzbürg
Saxony	Leipzig
Württemberg	Tübingen
Baden	Freiburg
	Heidelberg
Thüringen	Jena
Hessen	Giessen
Hamburg	Hamburg
Mecklenburg	Rostock

CURRICULUM OF A GERMAN MEDICAL SCHOOL

A. First Part, Medical Sciences

		Hours per Week
I.	Semester (Summer)	
	Botany Lecture	3
	Zoology Lecture	3
	Physics Lecture	5
	Chemistry Lecture	6
	Laboratory	5
	Anatomy Lecture	5
II.	Semester (Winter)	
	Anatomy Lecture	5
	Physics Lecture	5
	Chemistry Lecture	5
	Anatomy Lecture	5
	Laboratory	10
III.	Semester (Summer)	
	Anatomy Lecture	5
	Physiology Lecture	5
	Physics Laboratory	4
	Chemistry Laboratory	4
	Histology Laboratory	4
IV.	Semester (Winter)	
	Physiology Lecture	5
	Laboratory	4
	Anatomy Lecture	5
	Laboratory	10
V.	Semester (Summer)	
	Embryology	
	Review	

Electives, particularly in IV and V Semesters:—
- Organic Chemistry
- Physiological Chemistry
- Neuro-Anatomy
- Anatomy of the Sense Organs
- Physiology of Internal Secretions
- Non-medical subjects.

B. Second Part, Clinical Subjects

VI. Semester
- Lecture in Pathological Anatomy (General)
- Lecture in Special Pathology
- Propaedeutic Clinics in Medicine and Surgery
- Introduction Lectures in Medicine and Surgery
- Bacteriology Laboratory
- Introduction to Physical Diagnosis (Lecture)
- Pharmacology

VII. Semester
- Similar to VI Semester
- Microscopic Pathology, Laboratory
- Lecture in Pathological Anatomy (Special)

VIII. Semester
- No Required Lectures
- Numerous Demonstration Clinics in Medicine, Surgery and Specialties
- Section Work in Operative Surgery, Physical Diagnosis, Autopsies

IX. Semester
- Lecture in Hygiene
- Numerous Clinics
- Obstetrics Manikin

X & XI. Semesters
- Lecture in Hygiene
- Lecture in Legal Medicine
- Clinics, including Psychiatry and Obstetrics

Electives*:—
- Micro-chemical Diagnosis
- Massage
- Roentgenology of Normal Anatomy
- Electro-diagnosis
- Physical Therapy
- Ophthalmoscopic Examination
- Prognosis of Internal Diseases
- Diseases of Nutrition
- Diseases of the Spinal Cord
- Diseases of Urinary Tract
- Orthopedics
- Military Surgery
- History of Medicine
- Legal Psychiatry
- Toxicology
- Dietetic Cures
- Therapy of Neuroses
- Metabolic Diseases
- Lectures and Clinics in other special fields

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* Not all given at each school.

RESULTS OF FIRST EXAMINATIONS* IN THE TWELVE MEDICAL SCHOOLS IN PRUSSIA

Year	*Number Taking Examinations*	*Passed*	*Failed*
1920-21	2,665	2,044	621
1921-22	1,914	1,291	623
1922-23	1,515	1,009	507
1923-24	960	696	264
1924-25	890	671	219
1925-26	872	710	162
1926-27	1,166	932	234
1927-28	1,336	1,059	277

* Examinations at end of Five Semesters.

RESULTS OF FINAL EXAMINATIONS* IN THE TWELVE MEDICAL SCHOOLS IN PRUSSIA

Year	*Number Taking Examinations*	*Passed*	*Failed*
1920-21	1,607	1,335	272
1921-22	2,051	1,621	430
1922-23	2,166	1,771	395
1923-24	1,674	1,341	333
1924-25	1,406	1,111	295
1925-26	998	755	243
1926-27	867	691	176
1927-28	699	528	171

* Examinations at end of Eleven Semesters.

NUMBER OF MEDICAL STUDENTS IN GERMANY (INCLUDING DENTAL STUDENTS)

Berlin	2,277
Bonn	1,022
Breslau	695
Düsseldorf	201
Erlangen	415
Frankfurt	529
Freiburg	884
Giessen	250
Göttingen	383
Greifswald	313
Halle	265
Hamburg	457
Heidelberg	652
Jena	387
Kiel	446
Köln	386
Königsberg	449
Leipzig	825
Marburg	637
München	2,158
Münster	599
Rostock	483
Tübingen	557
Würzburg	1,134
Total	16,404

STUDENTS STUDYING MEDICINE IN GERMANY

Year	*Men*	*Women*	*Total*
1911	11,076	513	11,589
1925	6,533	1,225	7,758
1926	6,964	1,294	8,258
1927	8,122	1,541	9,663
1928	10,001	1,934	11,935

NUMBER OF STUDENTS STUDYING MEDICINE IN GERMANY, 1928

	Men	*Women*
German	9,229	1,791
Foreign*	772	143
	10,001	1,934

*From the United States, 19 students.

NUMBER OF PHYSICIANS IN GERMANY

(Exclusive of Danzig and the Saar)

		*Per 10,000 population**
1927	47,962	7.58
1928	48,507†	7.69

* 12.43 in cities over 100,000; 5.65 outside large cities.
† Of these 35,201 have no hospital or institutional affiliations.

PHYSICIANS IN GERMANY, 1928

Men	46,129
Women	2,378

NUMBER OF PHYSICIANS LICENSED IN GERMANY

1920-21	2,224
1921-22	2,337
1922-23	3,062
1923-24	2,612
1924-25	2,433
1925-26	2,067

FACULTIES OF MEDICINE AND MEDICAL SCHOOLS IN FRANCE

Faculties of Medicine

Paris
Montpellier
Nancy
Strasbourg
Alger
Bordeaux
Lille
Lyon
Toulouse

Colleges of Medicine

Besancon
Caen
Clermont
Dijon
Grenoble
Marseille
Poitiers
Rennes
Amiens
Angers
Limoges
Nantes
Reims
Rouen
Tours

SUGGESTED CURRICULUM FOR MEDICAL STUDENTS AT THE UNIVERSITY OF PARIS

	Mornings	*Afternoons*
First year	Clinics in Medicine and Surgery	Winter—Anatomy Summer — Histology and Physiology
Second year	Clinics in Medicine and Surgery	Winter—Anatomy Summer—Histology, Physiology, Chemistry
Third year	Clinics in Medicine, Surgery and Obstetrics	Winter—Bacteriology, Pathology Summer—Operative Surgery, Parasitology, Pathology
Fourth year	Clinics in Specialties	Winter—Pathology Summer—Materia Medica and Pharmacology
Fifth year	Clinics in Pediatrics, Infectious Diseases, etc.	Winter—Neurology, Hygiene Summer — Psychiatry, Legal Medicine

MEDICAL STUDENTS IN FRANCE, 1928

French, Men	8,963	
Women	2,138	
Total		11,101
Foreign, Men	2,385	
Women	367	
Total		2,752
Total, French and Foreign		13,853
Midwifery students	644	
Dental Students	1,484	
Total		2,128
Total, Medical Students only		11,725

STUDENTS IN UNIVERSITY OF PARIS MEDICAL SCHOOL, 1928

Regular students	2,475
Students working for University doctorate (foreigners)	563
Special students	357
Students not seeking degree	289
Students who have failed examinations but continuing	816
Irregular students—about	202
Total Medical Students	4,702
Students of Dentistry and Midwifery	864
Total Students in Faculty	5,566

MEDICAL DIPLOMAS GRANTED FOREIGNERS AT UNIVERSITY OF PARIS*

	French Students	*Foreign Students*
1924-25	533	302
1925-26	561	237
1926-27	606	297
Enrollment for first examination, 1928	2,307	684

* *Journal,* American Medical Association, March 15, 1930.

MEDICAL SCHOOL FEES AT PARIS

Inscriptions

4 quarterly inscriptions of 30 fr.	120 fr.
4 quarterly inscriptions for the library of 2.5 fr.	10 "
4 quarterly inscriptions for practical work of 15 fr.	60 "
Total for inscriptions per year	190 fr.
Total for five years	950 fr.

Examinations

1st examination	65 fr.
7 medical examinations at 55 fr. each	385 "
Thesis, including diploma	240 "
	690 fr.
Total Fees for Medical Course	1,640 fr.

MEDICAL SCHOOL FEES AT LYONS

First year	255 fr.
Second year	245 "
Third year	245 "
Fourth year	245 "
Fifth, including thesis	405 "
	1,640 fr.

MEDICAL SCHOOL FEES AT STRASBOURG

4 quarterly inscriptions of 47.50 fr. each	950 fr.
1st examination	65 "
7 examinations at 55 francs	385 "
Thesis, including diploma	240 "
	1,640 fr.

MEDICAL SCHOOLS

Austria

Graz, Styria—Karl Franzens Universität.
Innsbruck, Tyrol—Leopold Franzens Universität.
Vienna, Austria—Universität.

Switzerland

Basel—Universität de Basel.
Berne—Universität Bern.
Fribourg—Universite de Fribourg.
Geneva—Université de Genéve.
Lausanne—Université de Lausanne.
Neuchâtel—Université de Neuchâtel.
Zurich—Universität Zurich.

Netherlands

Amsterdam—Universiteit van Amsterdam.
Groningen—Rijks-Universiteit te Groningen.
Leyden—Rijks-Universiteit.
Utrecht—Rijks-Universiteit.

Sweden

Lund—Kungl. Universitetet Lund.
Stockholm—Karolinska Institutet (Medico-Chirurgical Inst.).
Upsala—Kungl. Universitetet i Upsala.

Denmark

Copenhagen—Kjobenhavns Universitet.

CURRICULUM AT VIENNA

I. Semester (Winter)
- Anatomy Lectures
- Zoology, Chemistry and Physics for medical students, lectures
- Chemistry, laboratory
- Anatomy, dissection

II. Semester (Summer)
- Anatomy Lectures
- Botany, Physics and Chemistry for medical students, lectures
- Chemistry, laboratory

III. Semester (Winter)
- Histology and Embryology, lectures
- Physiology, lectures and laboratory
- Anatomy, dissection
- Topographical Anatomy, lecture demonstrations
- Physiological Chemistry

IV. Semester (Summer)
- Physiology, lectures and laboratory
- Histology, laboratory
- Topographical Anatomy

V. Semester (Winter)
- Pathological Anatomy, lectures
- Pathological Histology, laboratory
- Bacteriology, laboratory
- Clinical Diagnosis, lectures
- Propaedeutic lectures, in Surgery

VI. Semester (Summer)
- Internal Medicine (with Praktikum), lectures
- Surgery (with Praktikum), lectures
- Pathological Anatomy and Histology, lectures and laboratory

VII. Semester (Winter)
- Internal Medicine and Surgery, lectures
- Dermatology and Syphilis, lectures
- General Pathology, lectures
- Pathological Anatomy, autopsy work
- Pharmacology, lectures

VIII. Semester (Summer)
- Internal Medicine and Surgery
- Ophthalmology
- Toxicology
- Obstetrics and Gynecology, including student internship

IX-X Semesters
- Same as VIII with numerous clinical specialties, and hygiene, legal medicine.

STUDENT ENROLLMENT IN THE MEDICAL SCHOOLS IN THE NETHERLANDS

	1914	1918	1921	1924	1926
Amsterdam	631	640	597	613	680
Leyden	349	335	382	510	447
Utrecht	584	663	771	899	998
Groningen	235	278	311	390	433
	1,799	1,916	2,061	2,412	2,558

COST OF MEDICAL EDUCATION, UNIVERSITY OF AMSTERDAM

	Expenditures (in guldens)*	*Cost per Student (in guldens)*
1905	145,000	257
1910	205,000	352
1914	202,000	320
1918	326,000	510
1921	470,000	788
1925	491,000	785

* About 40 cents in American money at present exchange.

NUMBER OF PHYSICIANS PER 100,000 POPULATION, 1927*

United States	127
Switzerland	80
Hungary	73
Japan	73
Italy	71
Denmark	70
England and Wales	67
Argentina	64
Germany	64
France	59
Greece	58
Norway	57
Netherlands	55
Belgium	54
Sweden	35
Poland	34
Mexico	24

* *Medical Education,* 1924-26, United States Bureau of Education.

COUNTRIES HAVING COMPULSORY SICKNESS INSURANCE*

(1929)

Austria	Belgium
Bulgaria	Chile
Czecho-slovakia	Esthonia
France (Alsace-Lorraine)	Germany
Great Britain	Greece
Hungary	Irish Free State
Italy (New Provinces)	Japan
Latvia	Lithuania
Luxemburg	Norway
Poland	Portugal
Roumania	Russia
Yugoslavia	Switzerland

* Some also have voluntary sickness insurance.

COUNTRIES HAVING VOLUNTARY SICKNESS INSURANCE*

Argentina	Australia
Belgium	Canada
Denmark	Finland
France (compulsory, 1930)	Great Britain
Northern Ireland	Italy
Netherlands	New Zealand
Palestine	Spain
Sweden	Switzerland
Union of South Africa	Uruguay

*Some also have compulsory sickness insurance.

LAWS INTRODUCING COMPULSORY SICKNESS INSURANCE

Country	*Date of compulsory sickness insurance acts*	*Workers covered*
Germany	1883	Industry
	1885	Commerce
	1886	Agriculture
Austria	1888	Industry
		Commerce
Hungary	1891	Industry
		Commerce
Norway	1909	Industry
	1915	Commerce
		Agriculture
Russia	1911	Industry
	1922	Commerce
Great Britain	1911	Industry
		Commerce
		Agriculture
Bulgaria	1918	Industry
	1924	Commerce
		Agriculture
Portugal	1919	All persons in a weak economic position
Poland	1920	Industry
		Commerce
		Agriculture
Greece	1922	Industry
	1923	Commerce
Japan	1922	Industry

SCALE AND PERIOD OF SICKNESS BENEFITS IN A FEW COUNTRIES

Country	*Benefit Commences*	*Maximum Period of Benefit*	*Rate*
Germany	Fourth day	26 weeks	50% of the basic wage
Austria	First day	52 weeks	66 2/3-80% of basic wage
Denmark	Fourth day	26 weeks in the course of 1 year	Minimum 40 öre
Great Britain	Fourth day	26 weeks	Male contributors 15s.; female contributors 12s. per week
Hungary	Third day	One year	75% of basic wage
Norway	Fourth day	26 weeks	60% of basic wage
Poland	Third day	39 weeks	60% of basic wage
Switzerland	Third day	180 days	Minimum, 1 franc per diem

GERMAN SICKNESS INSURANCE

Year	Cases of Sickness per 100 insured	Days of Sickness per insured
1913	42.1	8.7
1922	47.7	9.7
1923	34.1	7.0
1924	43.2	10.8
1925	51.5	12.5

EXTENSION OF PERIOD OF BENEFIT

Year	Percentage of funds which extended period From 27 to 39 weeks	From 39 to 52 weeks
1914	5.7%	3.9%
1921	7.7	4.7
1924	11.0	6.7
1925	12.0	7.0

COST OF MEDICAL BENEFITS, GERMANY

Nature of Benefits	1914		1924	
Medical treatment	104,041,000 M.	23.4%	205,729,000 M.	26.1%
Dental treatment	7,830,000	1.8	21,219,000	2.7
Nurses' salaries	4,552,000	1.0	15,866,000	2.0
Pharmaceutical assistance	58,505,000	13.1	92,336,000	11.7
Hospital treatment	62,858,000	14.2	109,349,000	13.9
Home nursing	174,000	..	98,000	..
Assistance for convalescents	292,000	0.1	2,379,000	0.3
Maternity treatment	108,000	..	313,000	..
Other forms of assistance	.....	..	11,095,000	1.4
Benefits in kind	238,360,000	53.6	458,294,000	58.1
Benefits in cash	206,413,000	46.4	331,523,000	41.9
Total	444,773,000 M.		789,817,000 M.	

DISTRIBUTION OF BENEFITS, GERMAN SICKNESS INSURANCE

(Per Insured Person)

	1925	1926	1927	1928
Medical Service	13 M	15 M	13 M	14.6M
Remedies	10	12.5	14.7	18
Hospital Care	13	17	17	19
Sickness Benefit	32	27	33	42
Home Benefit	72	74	82	98
Help in Home	4.5	6	7	7.5
Total	144.5	151.5	166.7	199.1
Paid by Person	78 M	83 M	98 M	130 M

TYPES AND NUMBERS OF BATHS PROVIDED IN LEIPZIG—1925, AS A PART OF MEDICAL BENEFITS

	1925
Steam baths	16,061
Needle baths	95,636
Baths with rising temperatures	12,262
Ordinary baths	3,741
Aerated water baths	8,056
Steam douches	617
Oxygenated baths	2,450
Electric-light baths	6,613
Sulphur baths	665
Hip baths	412
Brine baths	1,704
Peat baths	2,113
Iron baths	237
Inhalation	1,528
Radium baths	393
Mud baths	201
	152,691

LIMITS OF INCOME AND CAPITAL DANISH SICKNESS INSURANCE

A. Income Limits*

Large cities	3,150 to 3,500 crowns
Other towns over 2,000 inhabitants	2,800 to 3,150
Towns of 1,000 to 2,000	2,600 to 3,050
Country	1,900 to 2,200

B. Capital Limits

Unmarried persons	9,700 crowns
Persons with families	14,000

* Increased by 350 crowns for first child and 275 crowns for each other dependent child under 15 years of age.

DISTRIBUTION OF BENEFITS, DANISH SICKNESS INSURANCE*

(1925)

Cash benefits	19%
Medical attendance	41
Hospitals, local	13
private, tuberculosis, insane	4
Maternity benefit	3
Specialists	4
Dental treatment	2
Home nursing	2
Drugs	12
	100%

* Administration expenses extra (about 10% of total expenditures).